HATCH

Mapping the presence of animation activity across the UK economy
Stage Two: report commissioned by the BFI

A Report by Hatch
January 2024

About the authors

Hatch Urban Solutions provides economic and social insight to generate positive change in cities, sectors and organisations. We provide robust socio-economic impact analysis on corporates, sectors, major investment projects, places, and economic shocks.

www.hatch.co.uk

About the commissioning organisation

The BFI is a cultural charity, a National Lottery distributor and the UK's lead organisation for film and the moving image.

www.bfi.org.uk

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Executive summary

Introduction and purpose

i. Hatch Urban Solutions, working with glass.ai and Winning Moves, were commissioned by the BFI's Research and Statistics Fund using National Lottery funding to undertake Stage Two of a two-part research study to map the value and volume of the UK's animation sector.

ii. The Stage Two study built on the methodology and findings of the Stage One study[1], undertaken for the BFI by Hatch Urban Solutions working with glass.ai. Stage One developed a novel approach to mapping animation activity across the UK economy, entailing intelligent web-reading of company web site text using a set of animation-related topics/keywords agreed with the BFI and the project steering group. However, the Stage One research was not able to accurately calculate the full economic impact of the UK's animation value chain. Stage Two aimed to address the recommendations of the Stage One study. Its key objectives were to:

- Refine the methodology devised for mapping animation companies in Stage One to illustrate the size of the sector and its wider value chain and better understand animation company characteristics.
- Undertake in-depth analysis into the skills and workforce of animation companies.
- Supplement secondary data collection with primary research in order to facilitate a bottom-up approach[2] to economic impact modelling.
- Provide an updated and accurate assessment of the economic value of the sector and its wider value chain.

iii. The Stage Two study has made a substantial methodological contribution to the existing research on mapping the size and economic contribution of animation activities in the UK through its deployment of a combination of data collection methods. These included intelligent web-reading of company websites, searching employee data on LinkedIn and primary research, which was designed to enable alignment with the BFI-commissioned *Screen Business* study[3].

iv. The primary data collection enabled a more accurate estimation of the economic impact of animation activities in the UK. However, the Stage Two study estimates are likely to underestimate the full extent of the economic contribution of the sector and its value chain, due to the challenges experienced during the primary research stage. The lessons from the Stage Two study's primary research were used to arrive at a set of recommendations that can assist research efforts in the future.

Key findings

v. The Stage Two study categorised animation activity in terms of:

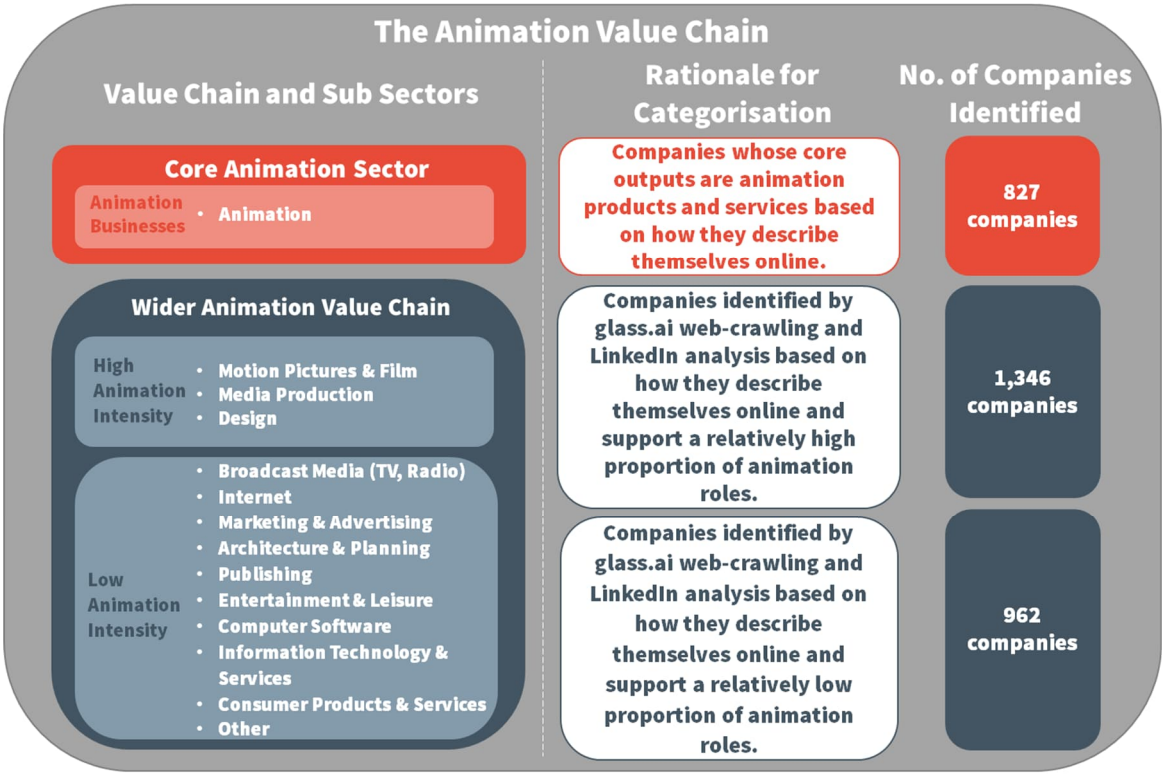
[1] April 2020, unpublished. Stage One was undertaken as preparatory work for Stage Two.

[2] A bottom-up approach uses low-level information on the drivers of economic impact to work-up the total economic contribution of the sector.

[3] *Screen Business*, BFI, 2021, https://www.bfi.org.uk/industry-data-insights/reports/uk-screen-sector-economy

- **Core animation:** companies whose core outputs are animation products and services based on how they describe themselves online.
- **Wider animation value chain:** companies whose core output is not animation based on how they describe themselves online, but for whom animation is an important tool or market area for which they provide service. The study further distinguished between:
  - **High animation intensity:** companies in the wider animation value chain that support a relatively high proportion of animation roles.
  - **Low animation intensity:** companies in the wider animation value chain that support a relatively low proportion of animation roles.

Figure 1 The animation value chain


The Animation Value Chain
Value Chain and Sub Sectors
Rationale for Categorisation
No. of Companies Identified
Core Animation Sector
Animation Businesses
Animation
Companies whose core outputs are animation products and services based on how they describe themselves online.
827 companies
Wider Animation Value Chain
High Animation Intensity
Motion Pictures & Film
Media Production
Design
Companies identified by glass.ai web-crawling and LinkedIn analysis based on how they describe themselves online and support a relatively high proportion of animation roles.
1,346 companies
Low Animation Intensity
Broadcast Media (TV, Radio)
Internet
Marketing & Advertising
Architecture & Planning
Publishing
Entertainment & Leisure
Computer Software
Information Technology & Services
Consumer Products & Services
Other
Companies identified by glass.ai web-crawling and LinkedIn analysis based on how they describe themselves online and support a relatively low proportion of animation roles.
962 companies

Source: Hatch analysis of glass.ai data (2021) and Winning Moves data (2022)

vi. The degree of animation dependence across the wider value chain was determined through an employee-based approach, drawing on the evidence collected through the LinkedIn workforce analysis.

vii. For the purposes of this study, companies identified in the video games sub-sector are not themselves considered part of the animation value chain. Animation skills within the development of video games are highly important. However, the Stage Two decision to exclude the video games sub-sector from the economic impact calculation was made to avoid the risk of double counting and hence avoid an inflated estimate of the economic value of the core animation sector and its wider value chain[4].

[4] The video games sub-sector was included in the workforce analysis to help us understand its skills composition and evaluate the importance of animation skills to this sector (please refer to Table 2.4).

viii. The analysis has identified **827 core animation companies** and **2,308 companies in the wider animation value chain**, which comprises:

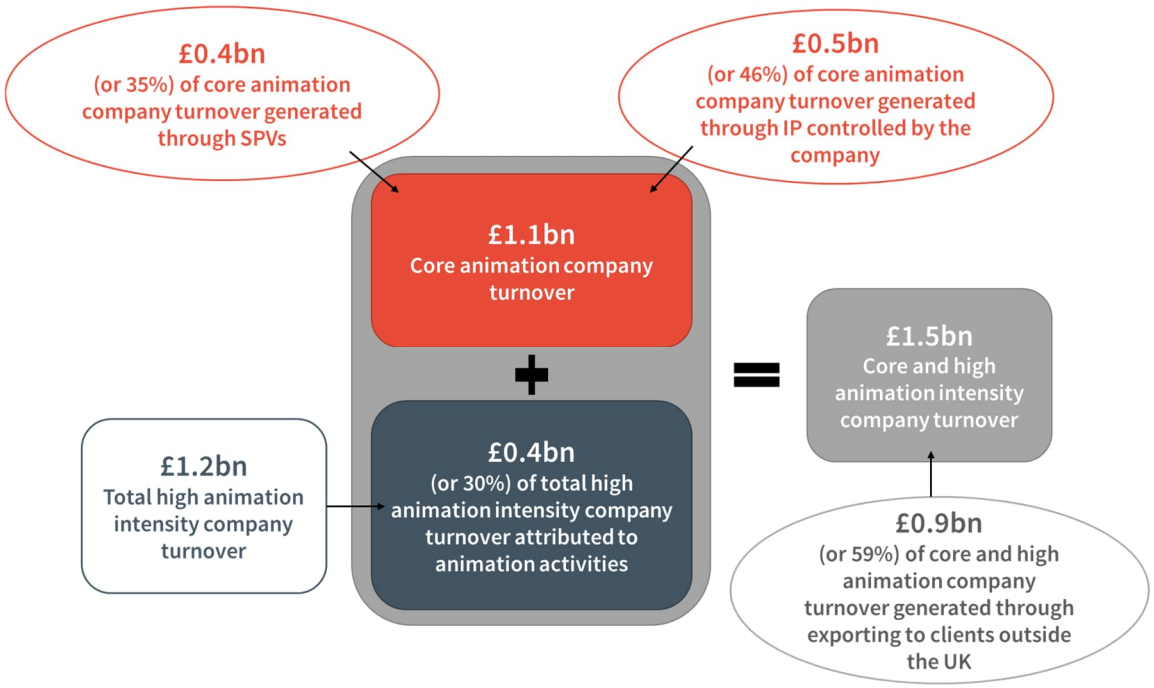
- **1,346 companies in the high animation intensity** aspect of the value chain
- **962 companies in the low animation intensity** aspect of the value chain.

Importantly this Stage Two report also shows how companies are geographically distributed as well as how they are split between core and high animation intensity parts of the value chain.

ix. Using primary research evidence, the economic impact of animation activity has been estimated as **the total value of the core animation sector** and **the value attributed to animation activities by high animation intensity companies in the wider value chain**. Due to the challenges encountered during the primary research stage, the impact generated from the animation related activities of low animation intensity companies has not been captured by these estimates.

x. It is estimated that the 2,173 core and high animation intensity companies identified generated £1.5bn of direct turnover from animation activities in 2019. The primary research has attempted to understand the share of turnover generated through Special Purpose Vehicles, spin-off licensing based on intellectual property and the international nature of the sector and its value chain, as shown in Figure 3[5].

Figure 2 Sources of core and high animation intensity direct turnover, 2019


£0.4bn
(or 35%) of core animation company turnover generated through SPVs
£0.5bn
(or 46%) of core animation company turnover generated through IP controlled by the company
£1.1bn
Core animation company turnover
£1.2bn
Total high animation intensity company turnover
£0.4bn
(or 30%) of total high animation intensity company turnover attributed to animation activities
£1.5bn
Core and high animation intensity company turnover
£0.9bn
(or 59%) of core and high animation company turnover generated through exporting to clients outside the UK

Source: Hatch analysis of Winning Moves and BFI-commissioned *Screen Business* data. Note: The sample size for turnover earned through SPVs (n=14), IP controlled by the company (n=13) and exporting to clients outside the UK (n=17) suggests a +/-25% margin of error. Note: Turnover figures were rounded to the nearest £100m. Any discrepancies in the percentage calculations are due to rounding.

xi. The turnover generated by core and high animation intensity companies in 2019 translated to **a direct GVA contribution of £995m**. The **total GVA contribution** (including direct, indirect and

[5] These estimates were based on small sample bases. As such, they should be treated as broad indicators.

induced effects) **was £1.7 billion**. The additional GVA discovered,[6] as a proportional increase, is similar to the proportions for video games,[7] indicating that, like the video games sector, animation activity has a healthy base of broad GVA in addition to the key expenditure credit activity. Moreover, core and high animation intensity companies directly employed around **8,200 full-time equivalent (FTE) workers**. A total of **16,600 FTE jobs were supported** (including direct, indirect and induced effects). In addition, there were **11,600 directly employed FTE freelance staff**[8]. The glass.ai LinkedIn analysis also identified **1,299 people who freelance** as animators[9].

xii. The Stage Two study establishes that the new size of the sector in terms of FTEs and freelancers (28,200) is larger than the number of people employed in radio broadcasting (14,000) or software publishing (22,000) and is of a similar size to the number of people employed in the manufacture of electronic components (28,000)[10].

xiii. Prior to Covid-19 and the cost of living crisis core animation companies had high expectations of growth - fuelled in part by continuing audience preferences for animation. High animation intensity companies had slightly lower expectations of growth but still with an overall expectation of some growth.

xiv. The regional analysis shows that there are areas of opportunity – principally in Northern Ireland and the West Midlands. Jobs in animation are more geographically dispersed than VFX or post-production. Clusters of animation activity were noted in the wider South East region, as well as the West of England and Greater Manchester Local Enterprise Partnership (LEP) areas and in the cities of Bristol, Brighton and Sheffield. However, similar to other parts of the creative industries, such as film and high-end television, there is a London and South East bias: around 37% of core animation and 42% of wider animation value chain companies were found in London. There are a number of opportunity areas: Stage Two analysis indicates that Northern Ireland and the West Midlands are under-represented for animation companies, despite these two areas having investment in terms of being production hubs.

Conclusions and key recommendations

xv. The Stage Two study:

- uncovered more companies undertaking animation related activities and better documented the extent of the sector and its wider value chain.

[6] At £1.5bn (2019), the GVA calculated for this report for core animation sector and high animation intensity companies across the UK economy is over five times larger than the overall economic contribution (GVA) from Animation Programmes Tax Relief (£282.5m) for the same year (Screen Business, 2021).

[7] The overall economic contribution (GVA) for Video Games Tax Relief (VGTR) for 2019 was £1.07bn; the overall economic contribution (GVA) for the video games sector for 2019 was £5.26bn (Screen Business, 2021).

[8] This figure considers freelancers in a variety of roles, including those on long-term contracts (12-24 months) but also other freelancers. This should be considered an upper bound, as FTE figures were not available for a small number of cases.

[9] The LinkedIn analysis captured only those animation freelancers that were not already attached to a company listed in the database compiled by glass.ai. To limit scope for double counting, the freelance animators identified through the LinkedIn analysis were not included in the 11,600 FTE freelancers estimate.

[10] ONS - DCMS Sectors economic estimates employment - individual SIC codes (2018)

- collected a richer set on information on company characteristics held on Companies House, as a result of glass.ai's improved matching capabilities.
- provided a better understanding of the animation skills and workforce by analysing information on the type of roles encountered across the animation value chain.
- developed a refined definition of animation value chain using employee-based estimates of the animation intensity of different sub-sectors.
- obtained more accurate estimates of the economic contribution animation by using data collected through primary research. These estimates are likely to be an under-estimation of the economic contribution of animation activities due to the challenges experienced during the primary research stage[11].

xvi. We believe this study is a major step forward in providing intelligence on the sector and its wider value chain. The valuable insights that can be generated through primary research have highlighted the need to consider strategies for collecting high-quality data from participants in the sector and the wider value chain, whilst ensuring a consistent and predictable approach and avoiding the risk of over-surveying companies in this sector and in the wider animation value chain.

xvii. Such strategies may include joining forces with other creative industries that are not served well by the current Standard Industrial Code (SIC) classification to:

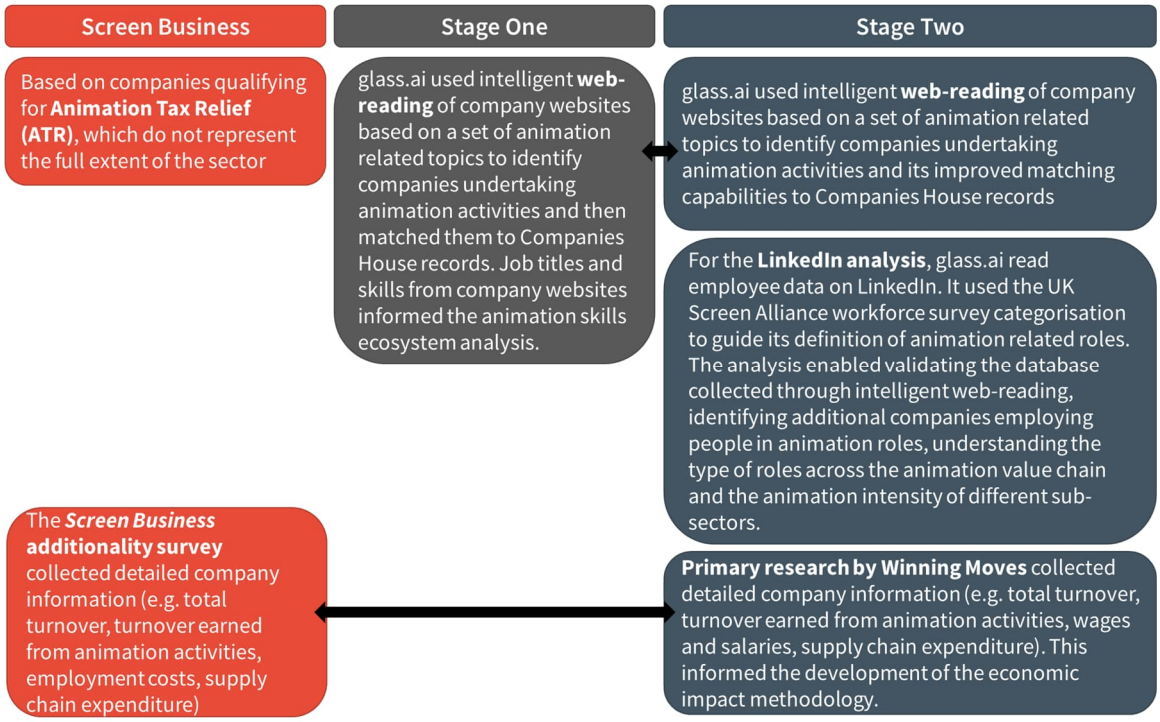
- create a database of agreed and aligned financial, staff and other information to include the key information points required for economic impact evaluation.
- reach an agreement for annual database updates at financial year end.
- put in place cross-sector trade body co-ordination of any required sector industry survey to supplement the available financial data, including maximising participation and securing contact details for the most appropriate point of contact.
- further explore the role for artificial intelligence applied to unstructured data and reduce the need for survey data.

Key notes on methodology and limitations

xviii. Figure 2 summarises the data collection methodology adopted in the Stage Two study, highlighting how it sought to align and built on the approach of the Stage One and BFI-commissioned *Screen Business* studies.

[11] Low animation intensity companies were excluded from the scope of the primary research (and hence the economic impact assessment) to concentrate on maximising the response rate from core and high animation intensity companies, which account for the majority of animation related activity. However, despite best efforts, it was not possible to secure a high response rate from large high animation intensity companies.

Figure 2 Data collection methods


Screen Business
Stage One
Stage Two
Based on companies qualifying for **Animation Tax Relief (ATR)**, which do not represent the full extent of the sector
glass.ai used intelligent **web-reading** of company websites based on a set of animation related topics to identify companies undertaking animation activities and then matched them to Companies House records. Job titles and skills from company websites informed the animation skills ecosystem analysis.
glass.ai used intelligent **web-reading** of company websites based on a set of animation related topics to identify companies undertaking animation activities and its improved matching capabilities to Companies House records
For the **LinkedIn analysis**, glass.ai read employee data on LinkedIn. It used the UK Screen Alliance workforce survey categorisation to guide its definition of animation related roles. The analysis enabled validating the database collected through intelligent web-reading, identifying additional companies employing people in animation roles, understanding the type of roles across the animation value chain and the animation intensity of different sub-sectors.
The ***Screen Business*** **additionality survey** collected detailed company information (e.g. total turnover, turnover earned from animation activities, employment costs, supply chain expenditure)
Primary research by Winning Moves collected detailed company information (e.g. total turnover, turnover earned from animation activities, wages and salaries, supply chain expenditure). This informed the development of the economic impact methodology.

Source: Hatch

Mapping the animation sector and its wider value chain

xix. The Stage Two study updated the list of animation related companies in the UK using the same web-reading process developed during the first stage of the project. glass.ai's improved matching capabilities resulted in a Companies House record being identified for 64% of the companies (compared to 44% for the Stage One study). The refined process has also improved the study's ability to distinguish companies making an active contribution to the sector and its wider value chain.

xx. Additional LinkedIn analysis was also undertaken, which validated the database collected through web-reading and identified additional animation companies as well as freelancers in animation roles (not currently attached to one of the companies).

The animation skills ecosystem

xxi. The Stage One animation skills analysis relied on job titles displayed on the websites of animation companies, which tend to be managerial and higher skilled roles. This approach also underplayed the role of sole traders and freelancers. The Stage Two LinkedIn analysis addressed these limitations.

xxii. As part of the Stage Two research, analysis of job titles listed on people's LinkedIn accounts provided insight into the types of animation roles undertaken across the value chain and how they vary across industries. By providing an indication of the level of animation activities taking place in companies across different sectors, the workforce analysis enabled a better understanding of the wider animation value chain, resulting in a more refined definition of the animation sector and its wider value chain.

Primary research

xxiii. The economic impact methodology employed in Stage One was constrained by the availability of published data. The Stage Two primary research collected survey data on turnover, supplier spending, employees and wages, which has enabled us to validate the data obtained through published sources and to develop a more nuanced, bottom-up economic impact methodology.

xxiv. The Stage Two approach has been to align the main stage survey with the survey of animation companies used in the BFI-commissioned Screen Business study, where possible. Information was requested for 2019 to align with the BFI-commissioned *Screen Business* study and to avoid the potential complications associated with information for 2020, which has been affected by the pandemic. Low animation intensity companies were excluded from the scope of the survey to devote the resources available to maximising the response rate from the rest of the value chain.

Wider context

xxv. The Stage Two study was informed by the outcomes of the Stage One study and work to better understand the economic contribution of the animation sector undertaken by the BFI-commissioned *Screen Business* study.

The Stage One approach

xxvi. Stage One aimed to better understand the existing statistics and data-gaps on the UK's animation sector. Its key objectives were to:

- better define the sector's value chain and ecosystem.
- map animation companies to illustrate the size of the sector.
- provide an initial assessment of the economic value of the sector.
- make recommendations for further research (Stage Two) to complete a fuller mapping of the sector.

xxvii. As part of Stage One, Hatch Urban Solutions and glass.ai developed an alternative approach to mapping the animation sector based on intelligent web-reading of company web site text. This approach used a set of animation-related topics/keywords agreed with the BFI and the project steering group to identify companies engaged in animation-related activities. The definition developed as a result categorised the animation sector in two parts: 'core' and 'ancillary'. This reflected the fact that while all the companies identified publicly promote their animation-related activity, many of them but especially those defined as ancillary were likely to undertake a variety of other activities.

xxviii. The Stage One research attempted, but was not able, to accurately calculate the full economic impact of the UK's animation value chain. This was due to difficulties around reliably estimating the economic value that animation can claim from its ancillary sectors and activities such as spin-off licencing. To understand the animation skills ecosystem, initial data on people's job titles and skills were also collected from the business websites and connected to LinkedIn accounts. But, given the reliance on business websites to capture data, the data collected was more likely to be skewed towards managerial and high skilled roles.

The BFI-commissioned Screen Business study approach

xxix. The BFI-commissioned Screen Business study added to the wealth of data demonstrating that the animation programme production sector is a high performer, both within the UK's creative industries and internationally. It captured the employment and GVA supported through the animation value chain by the elements of the sector in receipt of Animation Tax Relief (ATR): the animation industry has a relatively high GVA per FTE of £84,000[12] and ATR generates a strong return on tax investment of £4.53.[13] Screen Business's definition of the animation industry focuses on cultural products to be engaged in or their own entertainment/artistic value. The Stage Two study focused on capturing the full scope of animation activities undertaken across the economy. Hence, as shown in Table 1, the Stage Two economic impact estimates are significantly larger than the estimates available from the Screen Business study.

Table 1 Headline economic impact results and comparison to the BFI-commissioned *Screen Business* study

		Stage Two	Screen Business	Comments
Direct	GVA (£m)	£995	£130.6	The BFI-commissioned *Screen Business* study captured the employment and GVA generated directly throughout the value chain by the element of the sector in receipt of tax relief. Its definition of the animation industry focused on cultural products to be engaged with for their own entertainment/artistic value. The Stage Two report considered the animation activities undertaken by companies across the UK economy. The Stage Two economic impact estimates reflected the contribution by core and high animation intensity companies. They also tried to capture the freelance employment supported by core and high animation intensity companies.
	Employment – Staff (FTEs)	8,200	1,460	
	Employment – Freelance (FTEs)	11,600	n/a	
Total (direct, indirect and induced)	GVA (£m)	£1,690	£254.6	The direct impact through the value chain, plus indirect and induced impact. Input-output methodology employed in both cases.

[12] Compared to an average GVA per FTE across the UK economy of £66,100. Screen Business, BFI, 2021, https://www.bfi.org.uk/industry-data-insights/reports/uk-screen-sector-economy (2019 data)

[13] (2019 data), IBID

1. Introduction

What is the purpose of this study?

1.1 The UK's animation sector and its wider value chain have an international reputation. Its expertise in children's storytelling and design animation, film animation and digital animation has made it an attractive place for companies to develop films, TV shows, advertisements and marketing material.

1.2 Iconic programmes and characters such as Wallace & Gromit, Thomas and Friends, Shaun the Sheep, Ethel and Ernest, Chicken Run, Lion King (2019), Numberblocks, The Gruffalo and Peppa Pig have all been devised, developed and animated in the UK. Animation was the third most popular film genre in both 2020 and 2021[14]. Moreover, the UK produces 26% of animation television content in Europe – the second highest after France.[15] UK animation products are exported around the world and have created some highly lucrative franchises.

1.3 The full scale of the animation activity has never been truly understood because it is poorly served by national datasets as it is not fully captured by SIC or SOC codes[16]. Animation is more than just a focused sector in its own right – it is a skill which transfers to, and fuels, multiple parts of the creative industries. This factor might explain why, despite its more modest size compared to, for example, the film and television workforce, animation was discovered by Nesta to be the number one most promising digital skill for the future workforce when assessing over 412 million job adverts[17]. As technology continues to advance, this diversification will serve to make the animation sector and its skillsets more robust in terms of surviving economic cycles and booms and busts - workers who invest in animation skills are likely to be in high demand regardless of business cycles.

1.4 Some work has already taken place to better understand the animation sector's contribution to the UK economy. In 2018 and 2021, the BFI-commissioned *Screen Business*[18] study sought to capture the employment and GVA supported through the animation value chain by the elements of the sector in receipt of Animation Tax Relief (ATR). Moreover, its definition of the animation industry focused on cultural products to be engaged with for their own entertainment/artistic value. This is an important component of the animation sector but does not reflect its full value. As such, using those estimates alone underestimates the overall economic contribution of the animation sector and its wider value chain.

1.5 The Stage One report of this study (April 2020, unpublished[19]) sought to better understand the existing statistics and data gaps on the UK's animation sector. The study better defined the sector's value chain and ecosystem, developed a novel approach to mapping animation

[14] BFI Statistical Yearbook 2020, BFI Statistical Yearbook 2021

[15] hours, av. 2015-2019 https://www.obs.coe.int/en/web/observatoire/home//asset_publisher/wy5m8bRgOygg/content/europe-produces-around-55-animation-films-and-830-hours-of-animation-tv-content-each-year

[16] Companies chose a Standard Industrial Classification (SIC) code based on their typical business activity. A Standard Occupational Classification (SOC) code is a common classification of occupation characteristics for workers.

[17] Which digital skills do you really need? Nesta., 2018: https://www.nesta.org.uk/report/which-digital-skills-do-you-really-need/

[18] *Screen Business*, BFI, 2021, https://www.bfi.org.uk/industry-data-insights/reports/uk-screen-sector-economy

[19] Stage One was undertaken as preparatory work for Stage Two.

companies and provided an initial assessment of the economic value of the sector and its wider value chain. Stage One also identified several areas for improvement.

1.6 Stage Two aimed to address the recommendations of the Stage One study. Its key objectives were to:

- Refine the methodology devised for mapping animation companies in Stage One to illustrate the size of the sector and its wider value chain and better understand animation business characteristics.
- Undertake more in-depth analysis into the skills and workforce of animation companies.
- Supplement secondary data collection with primary research in order to facilitate a bottom-up approach to economic impact modelling.
- Provide a more accurate assessment of the economic value of the sector and its wider value chain.

1.7 Table 1.1 summarises the key limitations of the Stage One report and elaborates on the remit and approach of the Stage Two research.

Table 1.1 Purpose of the Stage Two research

	Stage One limitations	Stage Two remit	Stage Two approach
Improving mapping accuracy & understanding employment/ skills	• Not all identified animation companies were matched to a Companies House record. • Limited understanding of where in the value chain Special Purpose Vehicles (SPVs) sit and their contribution to the sector and its wider value chain. • The skills profile of those working in animation (particularly the differences between those in the core and wider value chain sectors) were not fully understood.	• Improve the match rate to Companies House records • Use a data-driven approach to understanding the scale and occurrence of SPVs within the animation sector and its value chain • More in-depth analysis into skills and workforce, employees and revenue as well as animation business specialisms	• Glass.ai read the websites of 2M+ UK companies and identified companies that explicitly talk about using animation in their descriptions. • An updated database of companies and more enhanced matching to Companies House records, size indicators, specialisms and data about the roles/skills was used. • Glass.ai augmented the coverage of the sector and its value chain by reading LinkedIn and finding companies that employ people with animation roles.
Improving economic impact calculations	• The value of spin-off licencing[20] impacts was out of the scope of the Stage One study. • Stage One overclaimed the economic impact from wider value chain companies which undertook animation activities. This was because there was a limited understanding of the proportion of animation dependant activity these companies undertake. • The Stage One approach assumed that the primary SIC code obtained by matching companies to a Companies House record (where possible) reflects the sector in which they operate. Hence, multiplier effects were based on best fit secondary data.	• Undertake primary research to enable the development of a more precise bottom-up approach to economic impact modelling. • Devise a methodology that could attribute the economic impact of wider value chain animation companies in a more nuanced way	• Primary research collected data needed to develop a bottom-up economic impact methodology and provided additional insights into items like SPVs and IP[21]. • In light of concerns about achieving response rates that would yield robust data, the scope of the survey was narrowed. This limited the study's ability to comment extensively on the share of turnover generated through specific activities, such as merchandising.

[20] Spin-off licensing based on intellectual property relates to the downstream value generated through the exploitation of intellectual property generated by the animation sector (which includes characters, stories and content). This intellectual property can be used for a variety of purposes, including merchandising, theme parks, entertainment, publishing, tourism, video games and advertising.

[21] As the approach relies on turnover to infer GVA impact, it should capture the economic value created through all income streams of a company. However, the narrower focus of the survey limits the study's ability to comment on the extent of the contribution of specific activities to animation turnover, beyond those asked for in the survey (SPVs, IP).

What does this report cover?

1.8 The Stage Two report is broken into the following sections:

- **Chapter 2 – The approach:** outlines the process of defining and mapping the animation sector and its wider value chain, designing the primary research and devising the economic impact methodology.
- **Chapter 3 – Mapping the animation value chain:** overviews the animation value chain based on secondary data collection and primary research.
- **Chapter 4 – Skills in the animation value chain:** discusses the types of roles undertaken in the animation value chain.
- **Chapter 5 – Economic impact findings:** demonstrates the economic value of the animation sector and high animation intensity companies in its value chain.

2. The approach

2.1 This section sets out how the Stage Two study defined the animation value chain and outlines the methodology taken to identify companies operating in the animation value chain and to estimate its economic contribution.

Introduction

2.2 Animation is not accurately captured by traditional industry definitions (SIC codes). Animation companies operate across a number of SIC codes, making it difficult to capture the total size and value of animation activity. Official Statistics classify animation as one small part of a much larger group of sectors (e.g., film, children's media), each with their own characteristics. However, the core animation sector is an economically distinct group of studios, production companies, distribution companies, all producing content aimed at different demographics and distributed as cinematic releases, TV formats and shorts used in advertising and corporate productions.

2.3 In the absence of robust industry data, investors and government have relied upon the economic impact figures from the BFI-commissioned *Screen Business* study, which only reports a portion of the sector that has claimed Animation Tax Relief (ATR)[22] on qualifying animation programmes and is therefore an under-representation of the full breadth of the UK's core animation sector and its wider value chain.

2.4 In addition to the core animation sector described above, there is a wider animation value chain. Through Stages One and Two of this commission, our work has sought to map the size, value and importance of the UK's core animation sector and its wider value chain, thus filling an evidence gap for investors and policy makers.

2.5 The Stage Two study categorised animation activity in terms of:

- **Core animation:** companies whose core outputs are animation products and services based on how they describe themselves online.
- **Wider animation value chain:** companies whose core output is not animation based on how they describe themselves online, but for whom animation is an important tool or market area for which they provide service. The study further distinguished between:
  - **High animation intensity:** companies in the wider animation value chain that support a relatively high proportion of animation roles.
  - **Low animation intensity:** companies in the wider animation value chain that support a relatively low proportion of animation roles.

2.6 The degree of animation dependence across the wider value chain was determined through an employee-based approach, drawing on the evidence collected through the LinkedIn workforce analysis. The following section outlines the research methodology that informed this definition of the core animation sector and its value chain.

[22] Animation Tax Relief (ATR) covers animation programmes intended for broadcast.

Web-reading

2.7 Hatch and glass.ai have developed an approach to identifying companies that operate in the animation sector and its wider value chain, based on intelligent web-reading of company websites. The approach is based on a set of animation-related keywords agreed with the BFI and project stakeholders, which were used to identify companies that mention animation and animation-related activities in their business descriptions.

2.8 This section details how the methodology evolved from the Stage One study and how this improved the accuracy of the approach.

2.9 The **Stage One study** identified around **2,000 companies** in the UK as being part of the animation sector and its wider value chain. It was possible to **link 44% of companies to a Companies House** record, thus providing valuable information about the company location, number of employees and SIC code.

2.10 In Stage Two, this web-reading approach was refined to provide an updated database of companies and enhanced matching to Companies House records, size indicators, specialisations and data about roles and skills. glass.ai read the websites of over two million UK companies and identified companies that explicitly talk about using animation in their descriptions.

2.11 In Stage Two, there was an increase in the total number of companies identified[23] and an improvement in the rate of companies that can be matched to a Companies House Record. Around 4,000 companies in the UK were identified as part of the animation value chain, 64% of which were linked to a Companies House Record.

Table 2.1 Stage One results of the web-reading

Sub-sectors	Number of companies with Companies House record	Total number of companies identified	Proportion matched to Companies House record
Core animation	352	811	
Wider value chain[24]	607	1,360	
Total	**959**	**2,171**	**44%**

[23] Due to an updated database of companies being used for web-reading, but also because web-reading was supplemented with LinkedIn analysis, which identified additional companies.

[24] Referred to as ancillary in the Stage One study

Table 2.2 Stage Two results of the web-reading and LinkedIn analysis

Sub-sectors	Number of companies with Companies House record	Total number of companies identified	Proportion matched to Companies House record
Core animation	601	985	
Wider value chain	1,995	3,083	
Total	**2,596**	**4,068**	**64%**

2.12 The methodology was also refined to provide increased accuracy in terms of identifying companies that were no longer active, by pinpointing companies that had been dissolved or were in liquidation according to Companies House records. It was also possible to exclude companies whose company website was inactive[25].

2.13 Therefore, the Stage Two web-reading provided an updated database of companies and enhanced matching to Companies House records. This allowed a more accurate distinction between companies that were making an active economic contribution to the sector and its wider value chain, and those that had ceased trading.

Additional detail on the web-reading methodology

2.14 glass.ai has a live discovery process that reads websites and classifies the site as a company website if it detects certain criteria around content. Currently, it reads over two million UK-based business websites, a significant proportion of UK companies with a web presence. Where possible the websites are matched with UK companies from Companies House records. As well as discovering new content, this live process keeps the information on the companies that it knows about up to date.

2.15 As not all UK companies have a website, the approach is limited to those with an independent web presence, which may lead to less representation of smaller organisations (including freelancers) or those in sectors that are less likely to have a web presence. Moreover, the approach relies on relevant companies listing specific keywords on a page read by the directed crawl. Appendix A provides further detail on the web-reading methodology and its limitations.

LinkedIn analysis

2.16 It was recognised during the Stage One work that the mapping approach relied on a company's online presence and company description. Some companies choose to present themselves to their customers in a way which does not necessarily reflect their engagement with animation (but may still use animation to deliver their products or services). **This may result in an under-estimation of the scale of the animation value chain.**

2.17 In order to overcome this limitation and discover harder-to-find companies, glass.ai undertook an **additional layer of analysis to both validate the web-reading approach and augment coverage of the sector and its wider value chain**. glass.ai searched employee data on LinkedIn

[25] An inactive website is not visible to the public. This can be because it is not yet published or it is in delinquent status with unpaid invoices.

to identify companies that employ people performing animation related roles. This enabled Stage Two to do the following:

- **Validate:** Check if the companies identified by the glass.ai web-reading as operating in the animation space employed people in animation related roles. This was done by discovering the LinkedIn accounts of companies identified through the glass.ai web-reading and for each company profile read the roles and skills of their UK employees. To identify animation related roles, the LinkedIn roles were matched and categorised according to the UK Screen Alliance's workforce survey[26], with the addition of 'Animation Director', based on feedback received.
- **Augment:** As an additional step to improve coverage, glass.ai searched LinkedIn for people in 'Animation', 'Creative Artist/Operator', 'Production Creative' and 'Production Management' roles. This in turned helped identify additional companies engaging in animation activities across the main sectors[27], which were used to supplement the results of the web-reading. The LinkedIn analysis also enabled searching for freelancers in animation roles that were not attached to one of the identified companies, so not related to any other listed companies.

2.18 Table 2.3 shows **the total number of companies identified, excluding those that were liquidated or dissolved according to Companies House records or had an inactive website.**

[26] An annual survey aiming to collect information on the employees of UK Screen Alliance members, including salary information and more recently skills.

[27] A combination of high number of companies and a high reliance on animation roles.

Table 2.3 Total number of companies identified

Sub-sectors	Companies identified through web-reading	Additional companies identified through LinkedIn	Total
Animation	828	0	**828**
Motion pictures and film	133	86	**219**
Media production	574	183	**757**
Design	156	213	**369**
Video Games*	161	351	**512**
Broadcast media (TV, radio)	52	78	**130**
Internet	22	0	**22**
Marketing and advertising	188	205	**393**
Architecture and planning	58	76	**134**
Publishing	15	0	**15**
Entertainment and leisure	27	0	**27**
Computer software	28	0	**28**
Information technology and services	21	0	**21**
Consumer products and services	24	0	**24**
Other	165	0	**165**
Total	**2,452**	**1,192**	**3,644**

*Note: The video games sub-sector was subsequently excluded from the analysis (please refer to the 'Treatment of Video Games Companies' box below).

2.19 Compared to the Stage One Study, **44% more companies were identified** as being part of the animation value chain.

2.20 The additional LinkedIn workforce analysis also facilitated a better understanding of the animation value chain. Animation is an important activity for companies in a number of industries to varying degrees. The workforce evidence collected was used to gauge the degree of animation dependence through an employee-based approach. **The results for the video games sub-sector were used as a threshold for identifying other sectors that rely strongly on animation activity and facilitated the classification of companies into high and low animation intensity.**

2.21 Using the analysis of the animation workforce, the degree to which subsectors use animation activity was determined and the animation value chain was categorised into two parts:

- Wider animation value chain: High Animation Intensity
  - Those with a higher proportion of people employed in an animation role in the sector than video games.
- Wider animation value chain: Low Animation Intensity
  - Those with a lower proportion of people employed in an animation role in the sector than video games.

Treatment of Video Games Companies – Animation skills within the development of video games are highly important. The Stage Two decision to exclude the video games sub-sector from the economic impact calculation was made to avoid the risk of double counting and hence avoid an inflated estimate of the economic value of the animation sector and its wider value chain.

2.22 The workforce analysis was also repeated for people in a key animation role[28], as shown in Table 2.4. Key animation roles were defined as roles grouped under the 'Animator' and 'Creative artist/operator' categories. A detailed definition of each category can be found in Appendix B.

[28] The Core animation roles fall under the 'Animator' or 'Creative artist/operator' categories.

Table 2.4 Proportion of people in animation roles by sub-sector[1]

Sub Sector[2]	Proportion of people with an animation role (%)	Proportion of people with a key animation role (%)[3]
Animation	53	29
Motion pictures and film	48	28
Media production	45	12
Design	42	15
Video games	36	20
Broadcast media (TV, radio)	31	8
Internet	29	0
Marketing and advertising	28	6
Architecture and planning	21	11
Publishing	19	2
Entertainment and leisure	14	3
Computer software	13	5
Information technology and services	12	1
Consumer products and services	7	1
Other	4	1

Notes: [1] Based on workforce data for the companies identified through the initial web-reading, but not the additional companies identified through the LinkedIn analysis. [2] Based on glass.ai sector taxonomy. [3] Key animation roles include 'Animator' and 'Creative artist/Operator' roles.

2.23 Undertaking the additional LinkedIn analysis meant that a broader set of animation companies could be identified than through the web-reading alone. This provided a larger pool of companies for further investigation. Even so, the additional analysis did not capture the full set of companies that are reliant on animation. This is because many companies are too small to require a full-time animator so the tasks are likely to be shared by people in other roles.

Primary research

2.24 The Stage One study identified a number of areas that would benefit from further investigation in order to improve understanding of the scale of animation activity in the UK and its economic impact.

2.25 Stage One provided an initial assessment of the economic impact of the animation sector and its wider value chain. The methodology used nationally published statistics on the economic value of companies and employees identified as being in core and ancillary (subsequently defined as wider value chain) parts of the animation sector. The Stage One approach to capturing economic impact (including indirect and induced impacts) used average data from relevant sectors and broad multipliers derived from published national benchmarks.

2.26 The Stage Two study sought to go beyond this by utilising bespoke primary research to reveal more information about companies in the animation value chain.

2.27 In addition, the broader understanding and definition of the animation value chain developed in the Stage Two study enabled exploration of wider relationships, such as the creation of Special Purpose Vehicles (SPVs)[29] for individual projects and the role of spin-off licensing based on exploitation of intellectual property[30].

A note on the BFI-commissioned *Screen Business* study: The BFI-commissioned *Screen Business* study is based on animation programmes that qualify for the Animation Tax Relief (ATR). Its definition of the animation industry focuses on cultural products to be engaged with for their own entertainment/artistic value. This is an important component of the animation sector but does not reflect its full value. Using this estimate alone would significantly underestimate the economic value of animation activity in the UK. The Stage Two primary research approach sought to align the survey questionnaire closely to that employed during the survey conducted for the BFI-commissioned *Screen Business* study. Where possible[31], the survey results of the BFI-commissioned *Screen Business* study were combined with Stage Two results to avoid approaching the same companies again, thus minimising survey fatigue.

Objectives

2.28 The inclusion of primary research in the Stage Two study was particularly helpful in improving understanding of the following:

- **Nature of animation activity** – Capturing additional detail around specialisms of animation companies helped to validate and add depth to information revealed through web-reading.
- **Turnover data** – Available information from the open web tends to only be available for less than 10% of all companies. Thus, the turnover data collected through the survey was an important enabling component of the Stage Two approach for modelling economic impact.
- **Number of employees** – It has been possible to derive some estimates of the number of employees from LinkedIn but a richer dataset improved the evidence base on which the impact modelling was based.
- **Wages and salaries** – Similar to the above, publicly available data only provides broad estimates of earnings. As this was a key driver of economic impact analysis, the survey data was important to improving estimates.
- **The role of Special Purpose Vehicles** – Surveying helped understand the scale and occurrence of SPVs within the animation sector and its wider value chain as this information was difficult to identify through web-reading.
- **Supply chain** – Surveying helped develop a more accurate understanding of spending in the supply chain and of the type of services procured.

[29] SPVs are companies established for a specific production and/or involve a joint relationship with another company. They are jointly or wholly owned by a company and can be registered in the UK or overseas.

[30] Spin-off licensing based on intellectual property relates to the downstream value generated through the exploitation of intellectual property generated by the animation sector (which includes characters, stories and content). This intellectual property can be used for a variety of purposes, including merchandising, theme parks, entertainment, publishing, tourism, video games and advertising.

[31] BFI-commissioned *Screen Business* response data was used only where company consent was obtained.

- **Location** – Surveying provided insights as to where employees were based and where activity is taking place.

2.29 Surveying firms in different parts of the value chain ultimately enabled a more accurate estimate of economic impact.

The survey

2.30 Winning Moves, a company specialising in designing and delivering research to inform policies, programmes and strategies, was subcontracted to undertake the primary research. A short pilot was undertaken in November 2021 by Winning Moves to understand the risk factors involved in securing an adequate response rate before proceeding to the main stage survey.

2.31 The main stage survey occurred between February and March 2022. The timing of the main stage survey coincided with two other surveys: the Ipsos Mori Film Tax Relief survey (undertaken on behalf of HMRC) and the UK Screen Alliance's Workforce and Pay Survey. Multiple strategies to mitigate survey fatigue were considered, including postponing the survey. Ultimately, it was felt that the best approach forward was to explain to companies why the purpose of each survey was important. The experience demonstrated how the sector can become over-surveyed and experience survey fatigue.

2.32 The database compiled by glass.ai was used as the sample frame for the primary research. The insights gained through the workforce analysis informed the design of the primary research framework. The target population was divided into large and small core and high animation intensity companies. A decision was taken to exclude low animation intensity companies from the primary research in order to maximise resources and enable a better survey response rate from the rest of the value chain (which delivers the majority of animation's economic impact).

2.33 Information was requested for 2019 to align with the BFI-commissioned *Screen Business* study and avoid the potential complications associated with information for 2020, which has been affected by the pandemic. Large core animation companies were surveyed using a full-length questionnaire aligned with that of the BFI-commissioned *Screen Business* study. A shorter version of the questionnaire was used to survey the other target groups to encourage participation. The survey was conducted via telephone. However, securing interviews with large high animation intensity companies proved a challenge. Hence, an online survey was also launched at a later date to boost the response rate. A more detailed description of the primary research design framework can be found in Appendix A.

Sample achieved

2.34 The telephone and online survey data collected by Winning Moves throughout the pilot and main stage phases were brought together with the response data of the BFI-commissioned *Screen Business* study (from participating companies who gave their permission for data to be shared)[32]. The following updates to the glass.ai database were made using this information:

- Any companies that were surveyed as part of the BFI-commissioned *Screen Business* study, but were not picked up through the web-reading or the LinkedIn analysis, were added to the glass.ai database.

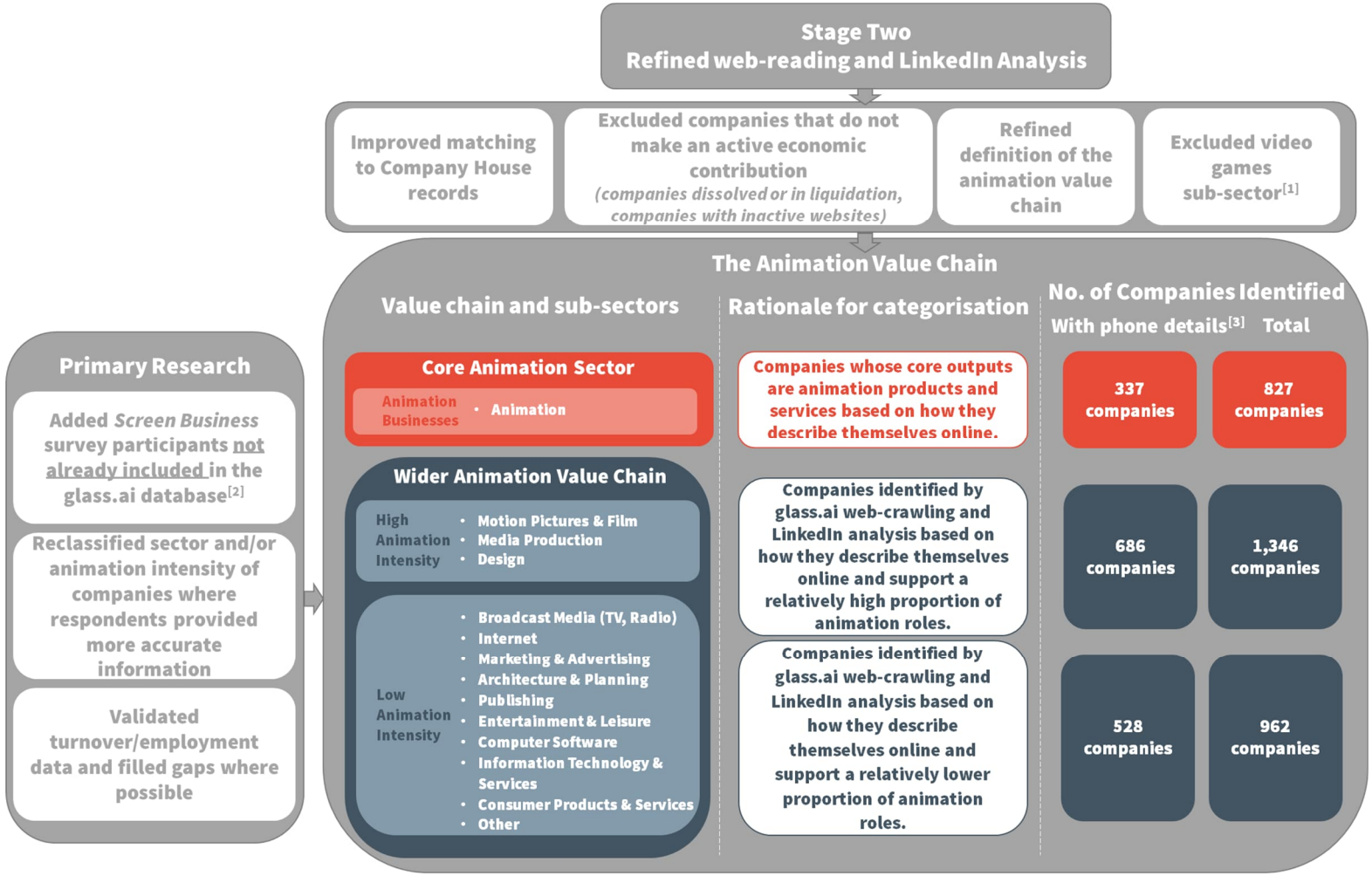
[32] Twelve respondents to the survey conducted a part of the BFI-commissioned *Screen Business* study consented to their survey data being used in this study.

- The sector categorisation and animation intensity of companies were reclassified where a respondent provided more accurate information.
- Turnover and employment information was cross-checked and gaps were plugged.

2.35 Figure 2.1 overleaf summarises the data collection journey and shows the final breakdown of the database following these updates.

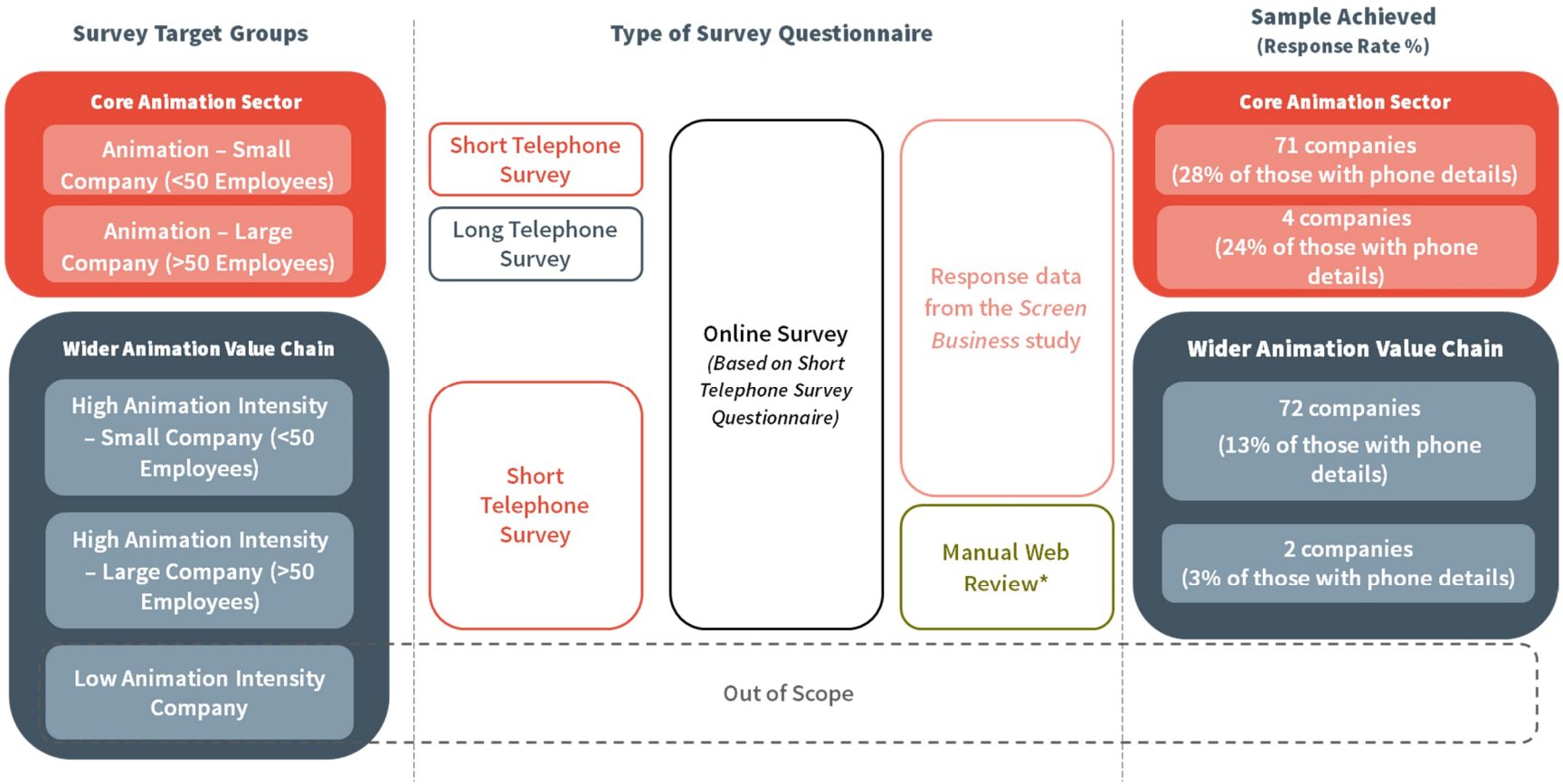
2.36 Figure 2.2 provides an overview of the primary data collection method and sample achieved for each sub-group considered. It shows that 149 companies were surveyed across the Winning Moves primary research and BFI-commissioned *Screen Business* study. An adequate responses rate was achieved across sub-groups, with exception of large high animation intensity companies (despite the mitigation strategies pursued at the primary research stage).

Figure 2.1 The data collection journey


Stage Two
Refined web-reading and LinkedIn Analysis
Improved matching to Company House records
Excluded companies that do not make an active economic contribution
(companies dissolved or in liquidation, companies with inactive websites)
Refined definition of the animation value chain
Excluded video games sub-sector[1]
The Animation Value Chain
Value chain and sub-sectors
Rationale for categorisation
No. of Companies Identified
With phone details[3]
Total
Primary Research
Added Screen Business survey participants not already included in the glass.ai database[2]
Reclassified sector and/or animation intensity of companies where respondents provided more accurate information
Validated turnover/employment data and filled gaps where possible
Core Animation Sector
Animation Businesses
• Animation
Companies whose core outputs are animation products and services based on how they describe themselves online.
337 companies
827 companies
Wider Animation Value Chain
High Animation Intensity
• Motion Pictures & Film
• Media Production
• Design
Companies identified by glass.ai web-crawling and LinkedIn analysis based on how they describe themselves online and support a relatively high proportion of animation roles.
686 companies
1,346 companies
Low Animation Intensity
• Broadcast Media (TV, Radio)
• Internet
• Marketing & Advertising
• Architecture & Planning
• Publishing
• Entertainment & Leisure
• Computer Software
• Information Technology & Services
• Consumer Products & Services
• Other
Companies identified by glass.ai web-crawling and LinkedIn analysis based on how they describe themselves online and support a relatively lower proportion of animation roles.
528 companies
962 companies

Source: Hatch analysis of glass.ai and Winning Moves data. Notes: [1] Rationale set out in 'Treatment of Video Games Companies' on page 9. [2] For further details on the BFI-commissioned *Screen Business* study and how it was used here refer to 'A note on the BFI-commissioned *Screen Business* study' on page 10. The BFI-commissioned *Screen Business* study can be accessed at https://www.bfi.org.uk/industry-data-insights/reports/uk-screen-sector-economy. [3] Number of companies that could be reached via telephone for primary research purposes.

Figure 2.2 Primary research method and sample achieved by sub group



Source: Hatch analysis of glass.ai and Winning Moves data. Note: Data collected through the manual web-review of large high animation intensity companies is not considered as part of the sample achieved.

Economic impact analysis

Types of economic impact

2.37 Stage Two sought to capture three types of economic impact:

- **Direct Impact:** The value of economic impact generated by animation activity, as measured by employment (FTEs) and Gross Value Added (GVA).[33]
- **Indirect Impact**: Generated by suppliers to the animation value chain and attributable to the spend of the value chain (e.g. among suppliers of IT support/services and hardware, landlords, and administrative supplies).
- **Induced Impact:** Generated from the spending power of direct and indirect animation employees in the wider economy.

2.38 Appendix A provides further detail on how direct, indirect and induced impacts were estimated using primary research data along with an assessment of the overall methodology.

2.39 When exploring the definition of the animation value chain one potential approach was a definition based on 'animation products'. However, this approach would make it difficult to capture the full value of the supply chain activity that supports the sector. Namely, such an approach may overlook companies that provide valuable inputs into animation companies but do not themselves deliver a final animation product e.g. visual effects studios, sound and music designers and software developers.

Differences with the first stage of the study

2.40 Stage One provided an initial assessment of the economic impact of animation activity. The overall impact of the animation sector was calculated by considering the total value of the core and ancillary (subsequently defined as wider value chain) parts of the sector.

2.41 It was acknowledged at this stage that not all company activity within the core and ancillary (subsequently defined as wider value chain) sectors were animation related, but that the companies identified by the web-reading used animation as a significant part of their offering. This approach overestimated the economic impact in the wider value chain, attributing it all to animation.

2.42 The methodology used nationally published statistics on GVA for companies and employees in defined industrial sectors to estimate the economic impact in the core and ancillary (subsequently defined as wider value chain) parts of the sector. The indirect and induced impacts were captured by broad multipliers derived from published benchmarks.

2.43 This was a high-level approach that took the average data from the relevant sector and assumed the averages apply to all companies and employees in that sector.

The role of survey evidence

2.44 A key contribution of the primary research in Stage Two was that it enabled an estimation of the overall economic impact of animation activity as the **total value of the core animation sector**

[33] GVA is the main measure of the value of economic activity in an organisation, sector or region. It is calculated at the sum of EBITDA (Earnings before Interest, Tax, Depreciation and Amortisation) and Total Employment Costs.

and **the value attributed to animation activities by high animation intensity companies in the wider value chain**. The survey also ensured the information required to calculate the indirect and induced impacts using an input-output[34] methodology was collected.

2.45 The Stage Two economic impact estimates did not capture the contribution of low animation intensity companies, as they were out the scope of the survey. Hence, the economic impact estimations may under-represent the contribution of the sector and its wider value chain, albeit slightly as core animation and high animation intensity companies capture the majority of value created by animation related activities.

2.46 The survey achieved a good coverage of the sample overall, with the exception of large high animation intensity companies (despite the mitigation strategies pursued at the primary research stage). This was because securing an interview with the necessary personnel (e.g. a finance representative) proved challenging. It should be noted that the under-representation of larger high animation intensity companies could also potentially lead to an underestimation of the economic impact of the high animation intensity part of the value chain.

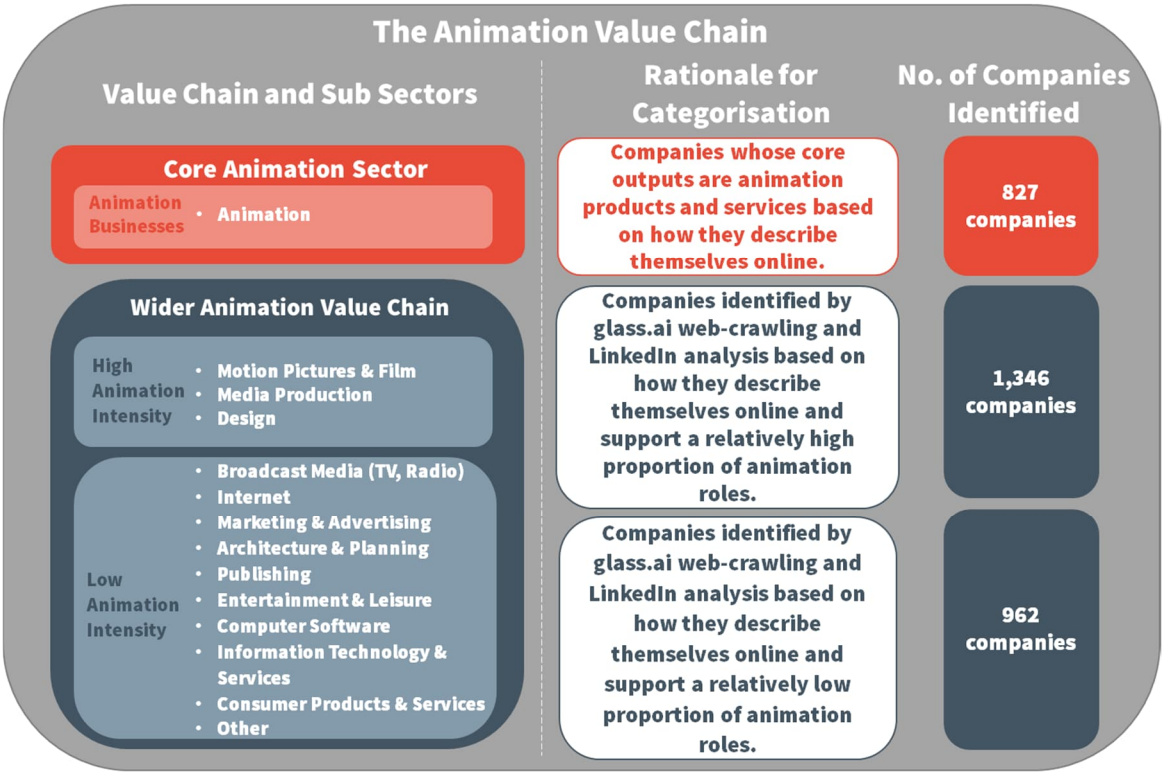
[34] An input-output model provides a quantitative representation of interdependent supply chains across different industries in an economy. As such, it allows an estimation of the total economy-wide impact of activity related to a specific event, organisation or sector.

3. Mapping the animation value chain

3.1 This section provides a snapshot about the core animation sector and its wider value chain – including high and low animation intensity companies – based on findings from the glass.ai reading, LinkedIn analysis and primary research.

Activities in the animation value chain

Figure 3.1 The animation value chain


The Animation Value Chain
Value Chain and Sub Sectors
Rationale for Categorisation
No. of Companies Identified
Core Animation Sector
Animation Businesses
Animation
Companies whose core outputs are animation products and services based on how they describe themselves online.
827 companies
Wider Animation Value Chain
High Animation Intensity
Motion Pictures & Film
Media Production
Design
Companies identified by glass.ai web-crawling and LinkedIn analysis based on how they describe themselves online and support a relatively high proportion of animation roles.
1,346 companies
Low Animation Intensity
Broadcast Media (TV, Radio)
Internet
Marketing & Advertising
Architecture & Planning
Publishing
Entertainment & Leisure
Computer Software
Information Technology & Services
Consumer Products & Services
Other
Companies identified by glass.ai web-crawling and LinkedIn analysis based on how they describe themselves online and support a relatively low proportion of animation roles.
962 companies

Source: Hatch analysis of glass.ai (2021) and Winning Moves (2022) data

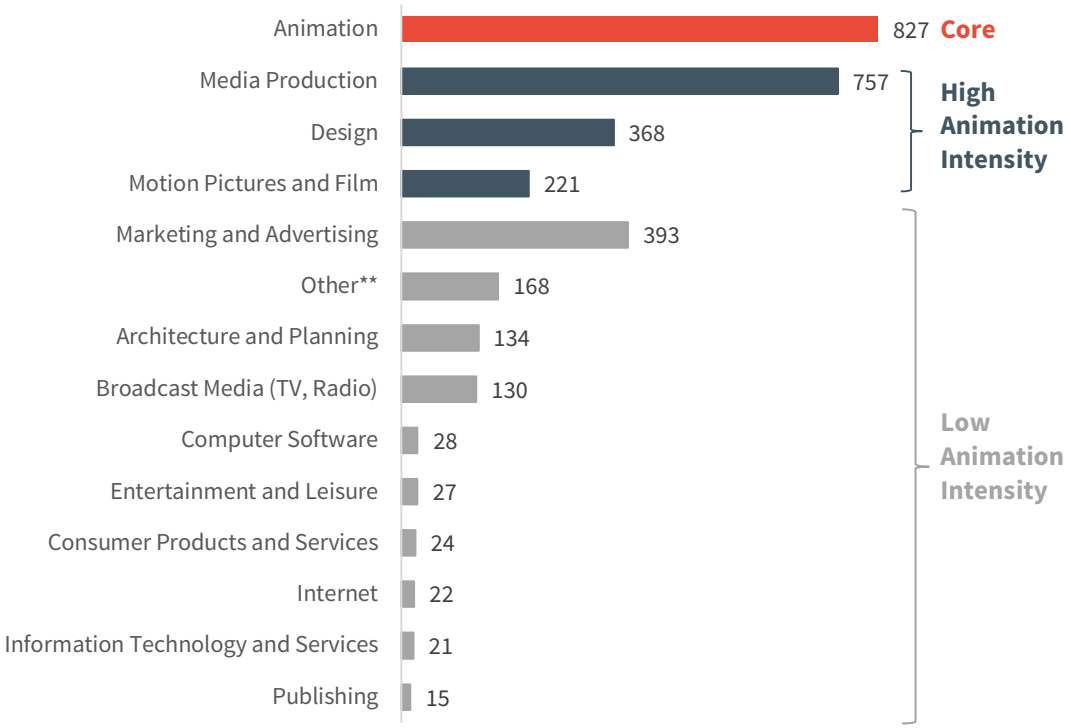
3.2 The analysis identified 827 core animation companies and 2,308 companies in the wider animation value chain, which comprises:

- 1,346 companies in the high animation intensity aspect of the value chain
- 962 companies in the low animation intensity aspect of the value chain.

3.3 The glass.ai LinkedIn analysis also identified **1,299 people who freelance** as animators not attached to any companies identified.

3.4 The wider value chain brings together a broad range of sub-sectors who use animation skills and activity to varying degrees. The highest number of companies in the animation value chain were identified in the media production (757), marketing and advertising (393) and design (368) subsectors.

Figure 3.2 Number of companies by sub-sector*



Source: Hatch analysis of glass.ai data (2021) and Winning Moves (2022) data. Note: *Based on glass.ai sector taxonomy. **Other covers a wide range of sectors, such as consulting, e-learning, market research and retail (among others).

Geographical location

3.5 Core animation and wider animation value chain companies are found across the UK, with a mix and diversity of companies across all geographies. Jobs in animation are more geographically dispersed than VFX or post-production. Of those companies for which address information was available, 2,305 core and wider value chain companies were located in England, 112 in Scotland, 65 in Wales and 28 in Northern Ireland.

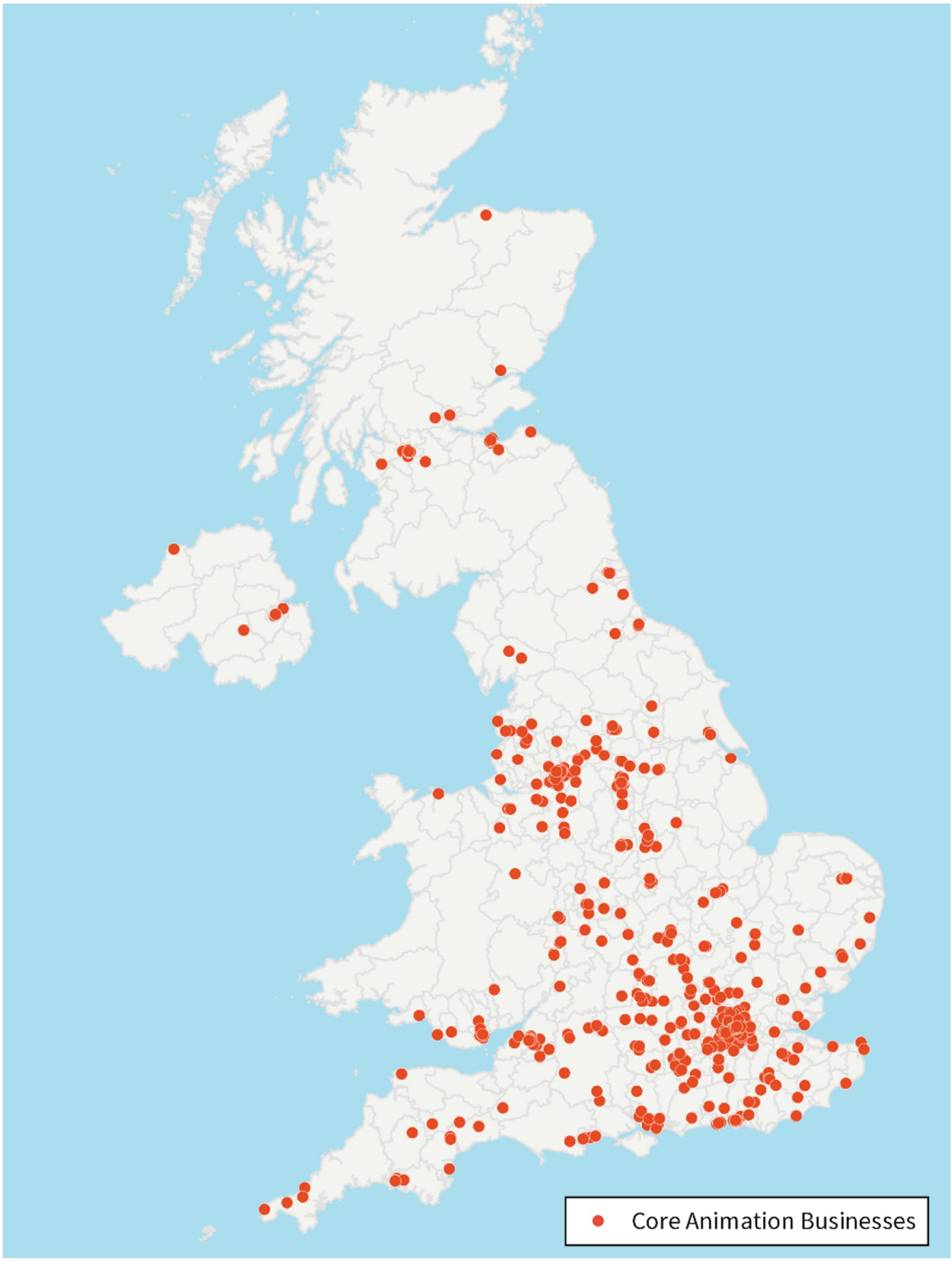
Figure 3.3 Number of companies in the animation value chain by country*		
	England	645 Core 1,660 Wider Value Chain
	Wales	15 Core 50 Wider Value Chain
	Scotland	28 Core 84 Wider Value Chain
	Northern Ireland	10 Core 18 Wider Value Chain

Source: Hatch analysis of glass.ai data (2021) and Winning Moves (2022) data. *For which address information is available.

3.6 Although the sector and its wider value chain have national reach, there are concentrations of activity, particularly around well-established locations for film and television production and the wider creative and digital sector. Around 37% of core animation and 42% of wider animation value chain companies were found in London. Clusters of activity were also noted in the wider South East region, as well as the West of England and Greater Manchester Local Enterprise Partnership (LEP) areas[35]. Namely outside London, clusters of animation activity were observed in the cities of Bristol, Brighton, Manchester as well as Sheffield. Figure 3.4 and Figure 3.5 shows the dispersion of core and wider value chain companies across the UK.

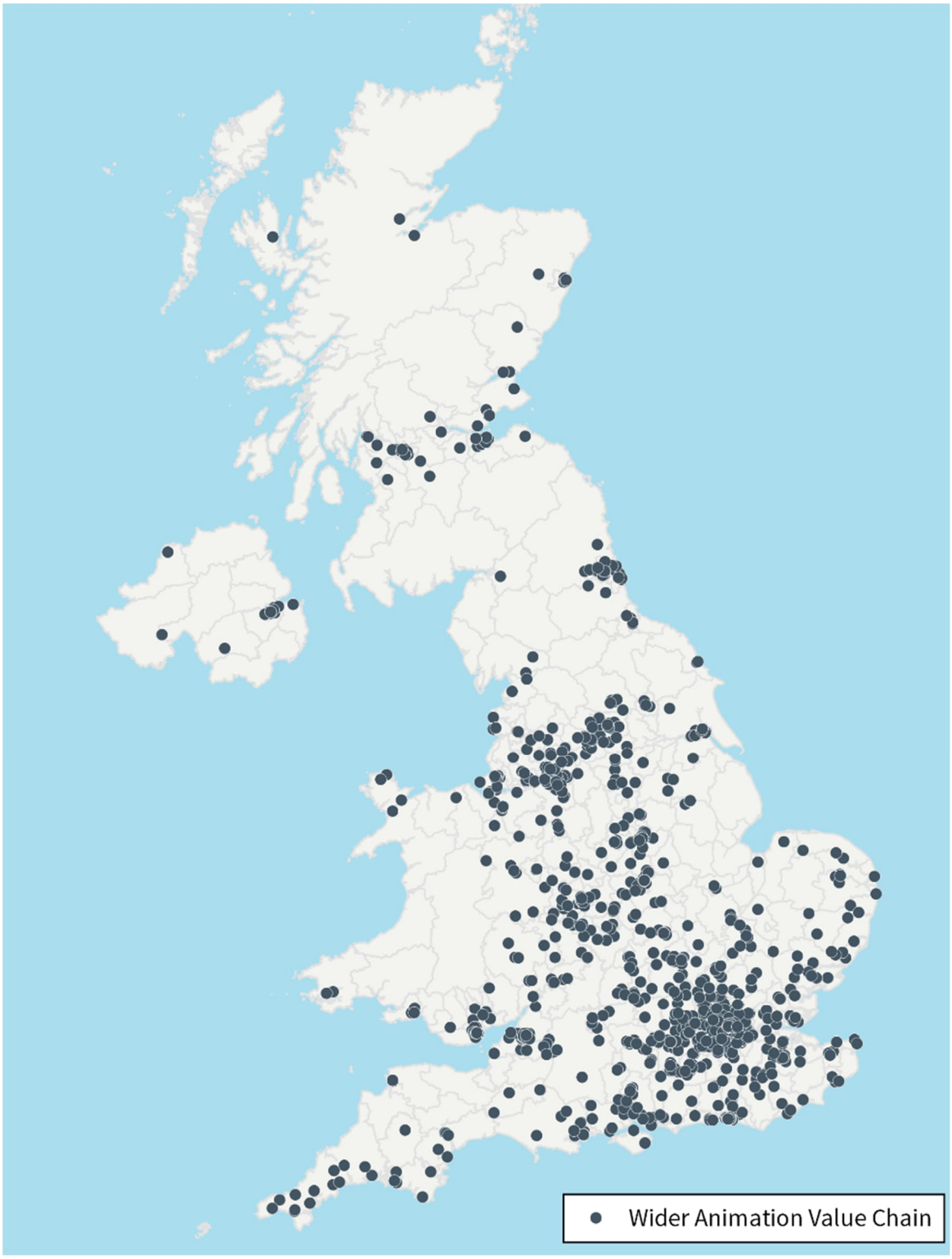
[35] Local Enterprise Partnerships (LEPs) are partnerships between local authorities and companies that are specific to England, but not other UK countries.

Figure 3.4 Location of companies in the core animation value chain



Source: Hatch analysis of glass.ai data (2021) and Winning Moves data (2022)

Figure 3.5 Location of companies in the wider high and low animation value chain

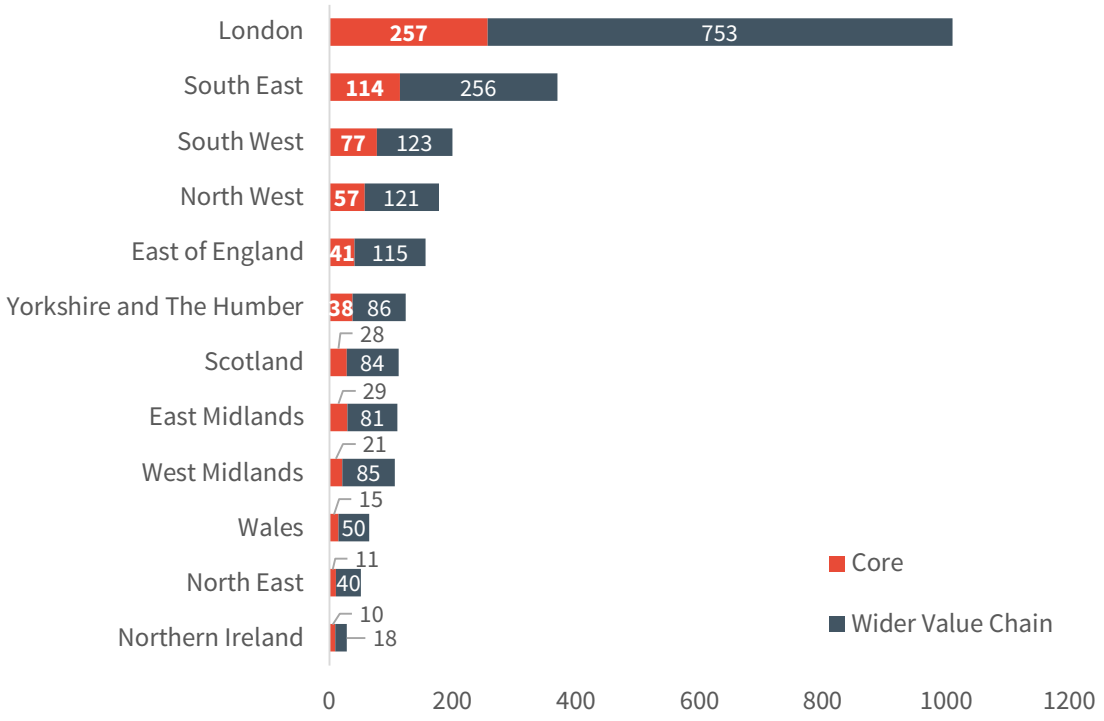


Source: Hatch analysis of glass.ai data (2021) and Winning Moves data (2022)

3.7 Figure 3.6 shows the number of companies in the animation value chain by UK nation and region. To understand the concentration of animation companies relative to the rest of the economy, a location quotient was calculated. This showed how the proportion of core animation and wider animation value chain companies in a particular area (out of all companies) compared to the proportion of core animation and wider animation value chain companies nationally. For example, in the South East region, core animation and wider animation value chain companies accounted for 0.21% of all companies in the area compared to 0.09% nationally, resulting in a location quotient of 2.3. A location quotient above 1 means the area has a relatively high specialisation in companies undertaking animation related activities.

3.8 Table 3.1 shows that only two regions have a high concentration of activity in the animation sector and its wider value chain, the South East region (LQ=2.3) and London (LQ=2.1).

Figure 3.6 Number of companies in the animation value chain by UK nation and region



Source: Hatch analysis of glass.ai data (2021) and Winning Moves data (2022)

Table 3.1 UK nations and regions with the highest proportion of animation value chain companies as a proportion of total companies

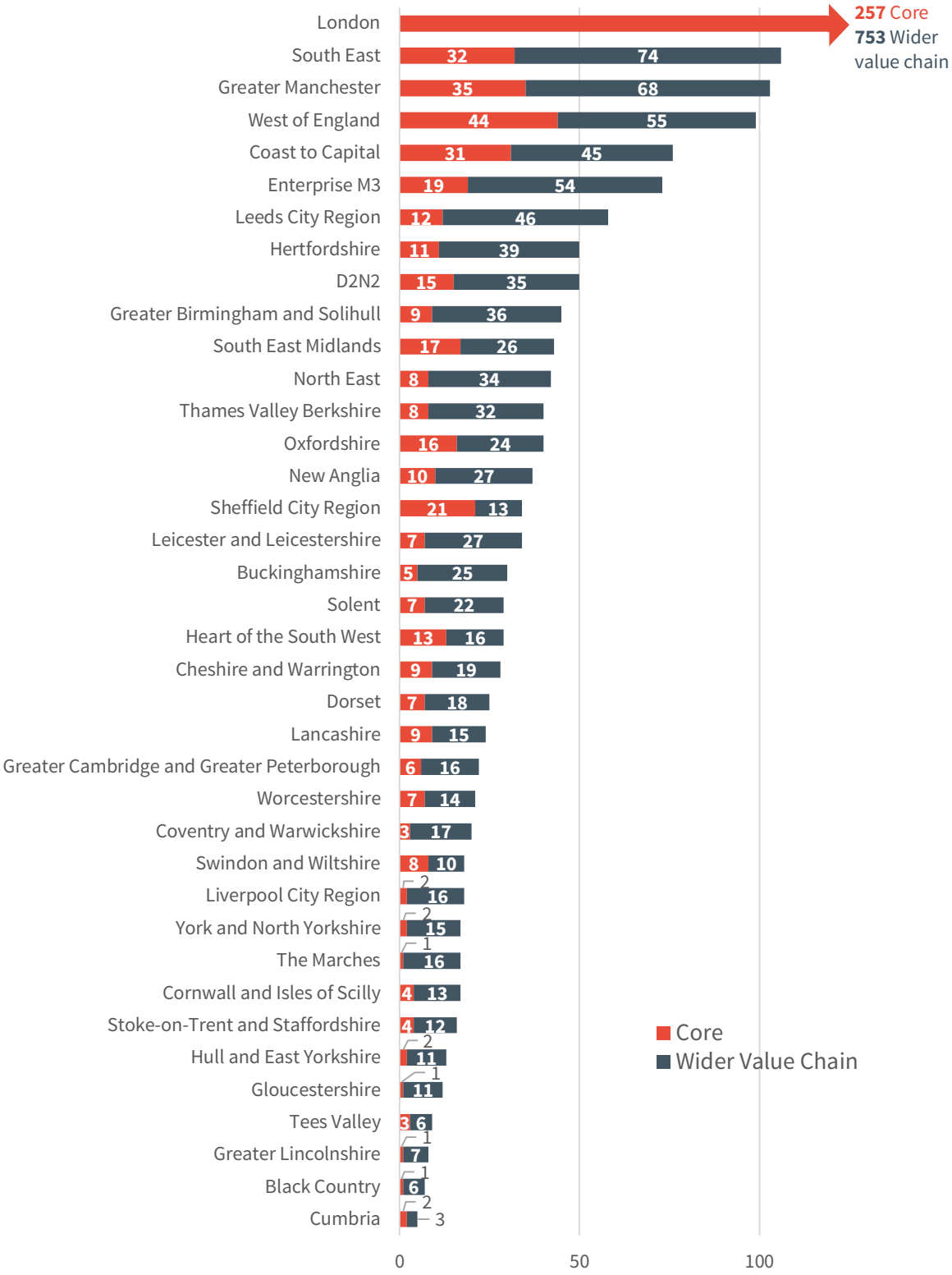
UK nation/region	Location quotient	Number of businesses in the animation value chain
South East	2.3	370
London	2.1	1010
North East	1.0	51
South West	0.9	200
North West	0.7	178
Yorkshire and the Humber	0.7	124
Scotland	0.7	112
Wales	0.7	65
East Midlands	0.6	110
East of England	0.6	156
West Midlands	0.5	106
Northern Ireland	0.4	28

Source: Hatch analysis of glass.ai data (2021) and Winning Moves data (2022). Note: Some LEP areas overlap.

3.9 The analysis has been repeated for English LEP areas below to provide a more granular view. Table 3.2 shows that only six English LEP areas had a high concentration of activity in the animation sector and its wider value chain, and there was a strong South of England representation amongst the top 10 LEP areas. The West of England (which includes Bristol and Bath) had the highest concentration of animation companies (with a location quotient of 2.3). Other areas with a specialisation above one included London (2.1), Oxfordshire (1.4), Coast to Capital (1.1), Greater Manchester (1.1) and Buckinghamshire (1.1).

3.10 Stage Two analysis indicates that there are a number of opportunity areas: Northern Ireland and the West Midlands are underrepresented for animation companies despite these two areas having investment in terms of being production hubs. Animation has the potential to grow strongly in these areas.

Figure 3.7 Number of companies in the animation value chain by English Local Enterprise Partnership area



Source: Hatch analysis of glass.ai data (2021) and Winning Moves data (2022). Note: Some LEP areas overlap.

Table 3.2 LEP areas in England with the highest proportion of animation value chain companies as a proportion of total companies (Top 10)

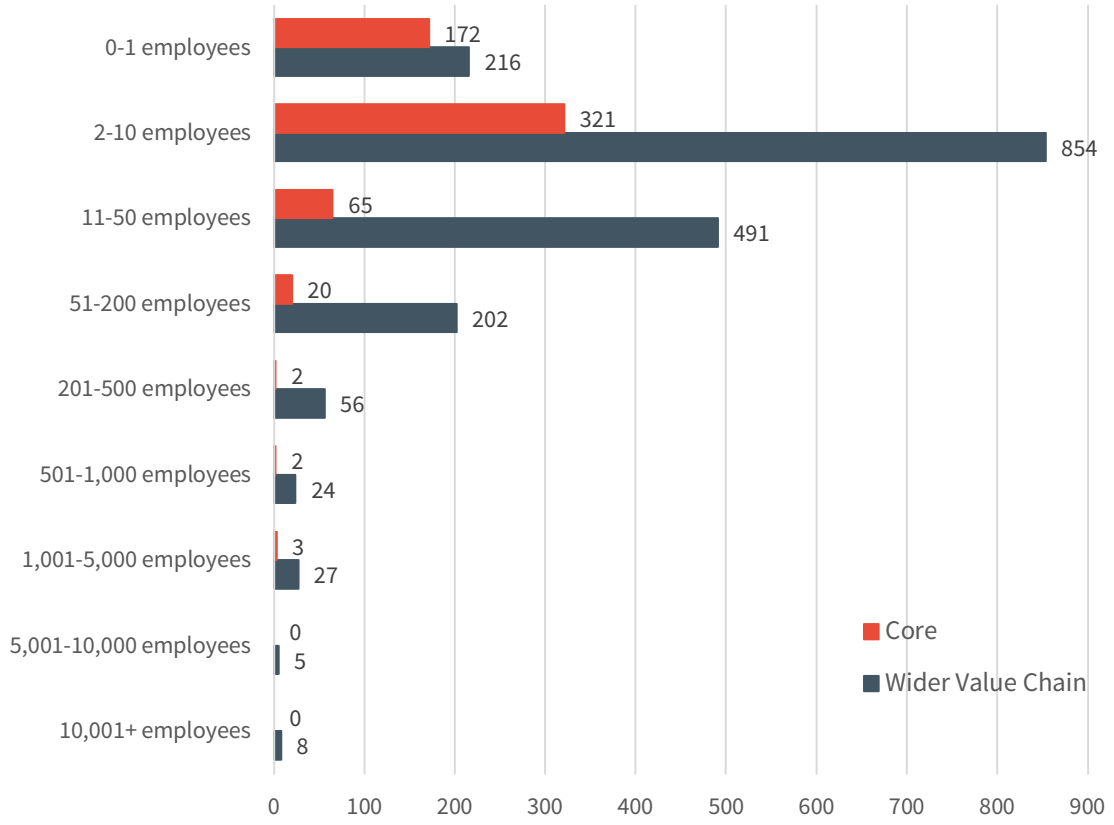
LEP	Location quotient	Number of businesses in the animation value chain
West of England	2.3	99
London	2.1	1,010
Oxfordshire	1.4	40
Coast to Capital	1.1	76
Greater Manchester	1.1	103
Buckinghamshire	1.1	30
Enterprise M3	1.0	73
Thames Valley Berkshire	1.0	40
Sheffield City Region	0.9	34
Hertfordshire	0.9	50

Source: Hatch analysis of glass.ai data (2021) and Winning Moves data (2022). Note: Some LEP areas overlap.

Company demographics

3.11 Companies in the animation value chain identified through the glass.ai web-reading were also matched to Companies House and LinkedIn profiles. This additional matching meant publicly available data could be compiled, which provided further insights on company demographics within the value chain.

Figure 3.8 Size of companies in the animation value chain



Source: Hatch analysis of glass.ai data (2021) that was matched to Companies House records and LinkedIn profiles and Winning Moves data (2022). Note: Sample based on 585 core companies and 1,883 wider animation value chain companies where information was available. It is expected that coverage of the largest companies in the animation sector and its wider value chain is stronger, whereas coverage for smaller freelancer companies is weaker.

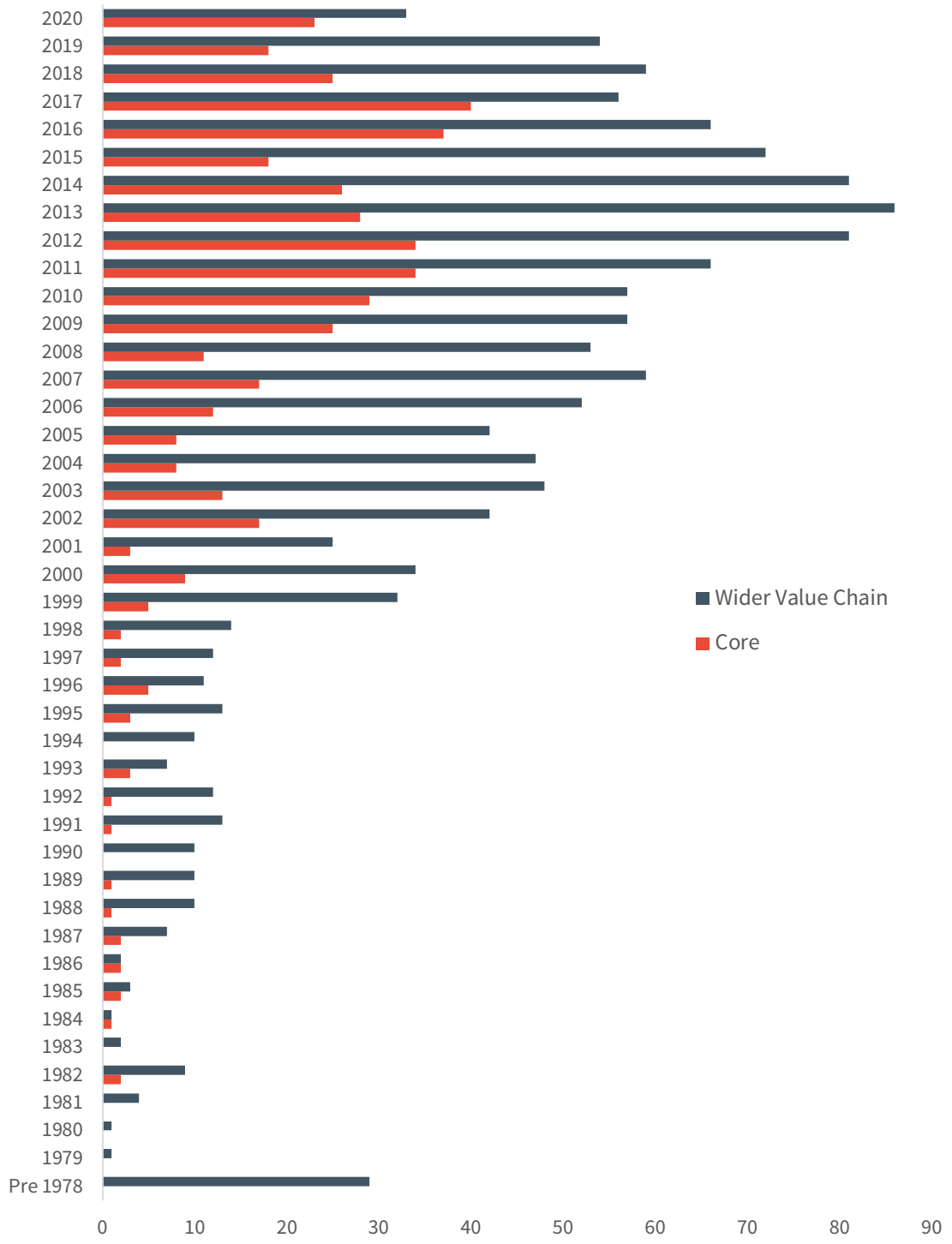
3.12 Wider high and low animation value chain companies tended to have a larger number of employees relative to core animation companies, with 6% employing more than 200 people compared to 1% of core animation companies. This is partly reflective of several large wider animation value chain companies involved in the production of animation related merchandise, but also the relatively high number of freelancers and micro-companies within the core animation sector.

3.13 Companies identified through glass.ai web-reading were also matched to Companies House records[36]. From this, it was possible to identify the year of incorporation for animation companies.

3.14 The data showed that 67% of core animation and 51% of wider animation value chain companies (still surviving) were incorporated between 2010 and 2020. During this period, the number of wider animation value chain company incorporations peaked in 2013, slowing down thereafter. The year with the highest number of core animation company incorporations was 2017.

[36] In Stage One, it was possible to identify records for 44% of companies identified. In the Stage Two study, as well identifying more companies, glass.ai were able to match 64% of these companies to Companies House.

Figure 3.9 Number of animation value chain company incorporations (Pre 1978 – 2020)



Source: Hatch analysis of glass.ai data (2021) and Winning Moves data (2022)

Prospects for growth[37]

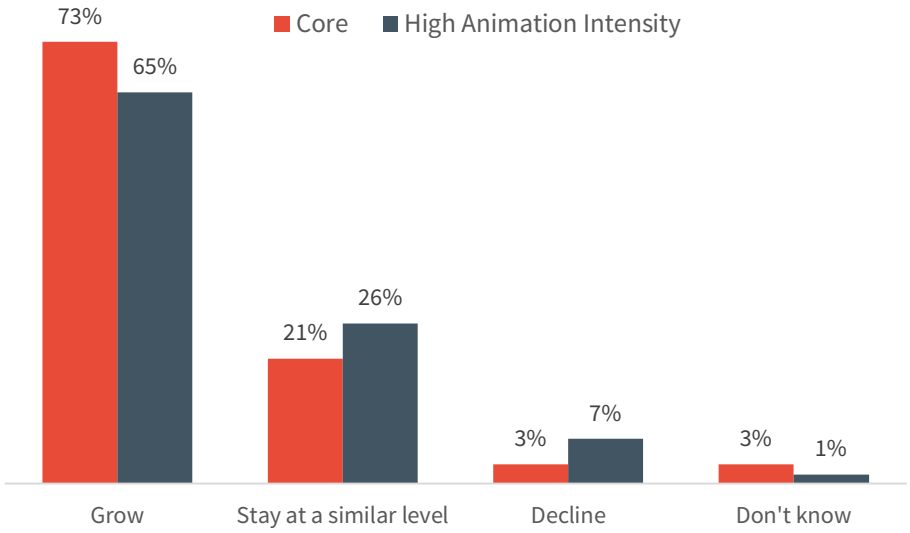
3.15 Whilst the survey focused on reporting data from 2019, it also asked companies about the changes they expect in income from animation related activities over the next five years (2022-2027). As detailed in Chapter 2, low animation intensity companies were excluded from the scope of the survey in an effort to maximise the response rate among core animation and high animation intensity companies. As such, this section does not offer the perspective of low animation intensity companies on the growth prospects of their animation related activities.

3.16 Overall, animation companies were optimistic about their prospects for growth through animation related activities. A relatively large share of core animation companies expected to see income from animation activities grow compared to high animation intensity companies in the wider value chain (73% vs 64% of respondents).

3.17 Core animation companies based their optimistic outlook on the growth they had experienced in the recent past as well as their observation of increasing demand for animation products and services. Some core animation companies commented on the potential for export-led growth, given the opportunities available to them outside the UK.

3.18 In a similar vein, high animation intensity companies noted that demand for animation products and services has been increasing and the technologies in this field have been improving. Hence, they consider this to be a growth area for their companies. Some high animation intensity companies said that they saw their animation related activities pick up during the Covid-19 pandemic.

Figure 3.10 Over the next five years, how do you expect your business income from animation related activity to change? (% of Respondents)



Source: Hatch analysis of Winning Moves data (2022). Note: Based on a sample size of 63 core animation and 68 high animation intensity companies.

[37] Note that the survey was undertaken prior to the UK's cost of living and energy crisis so the evidence presented here should be treated with caution.

4. Skills in the animation value chain

4.1 This section draws on evidence collected through the LinkedIn analysis to understand the types of animation roles encountered across the different subsectors in the value chain.

Roles in the animation value chain

4.2 As discussed in the *LinkedIn analysis* section in Chapter 2, additional LinkedIn analysis was undertaken to validate and augment the web-reading approach to identifying companies undertaking animation activities. The reason for this was that web-reading relies on how a company describes itself online, which may not necessarily reflect how it uses animation to deliver its products or services. The additional analysis entailed searching employee data on LinkedIn to identify companies employing people in animation related roles. In the process, it generated valuable information on the skills of the animation workforce.

4.3 Specifically, analysis of job titles listed on people's LinkedIn accounts provides insight into the types of roles undertaken in the value chain. This was segmented by the industry that people with these roles work in to highlight the variation in roles performed across the value chain.

4.4 The study identified people working in the animation value chain and identified the numbers who worked in four types of roles:

1) Animator e.g. 3D animator, character animator

2) Creative Artist/Operator e.g. 3D artist, character modeller, tech op

3) Production Creative e.g. video editor, audio designer

4) Production Management e.g. associate producer, production coordinator

4.5 In agreement with the project steering group, it agreed to consider as animation workforce:

- All employees in animation companies (core value chain)
- People working in specific 'Animator', 'Creative artist/operator', 'Production Creative' and 'Production Management' roles in the wider value chain[38]
- Freelancers i.e., sole traders supplying animation skills to the entire animation value chain.

4.6 Figure 4.1 highlights the proportion of people in each subsector in each type of role. The full list of what roles were included in each of the categories is set out in Appendix B.

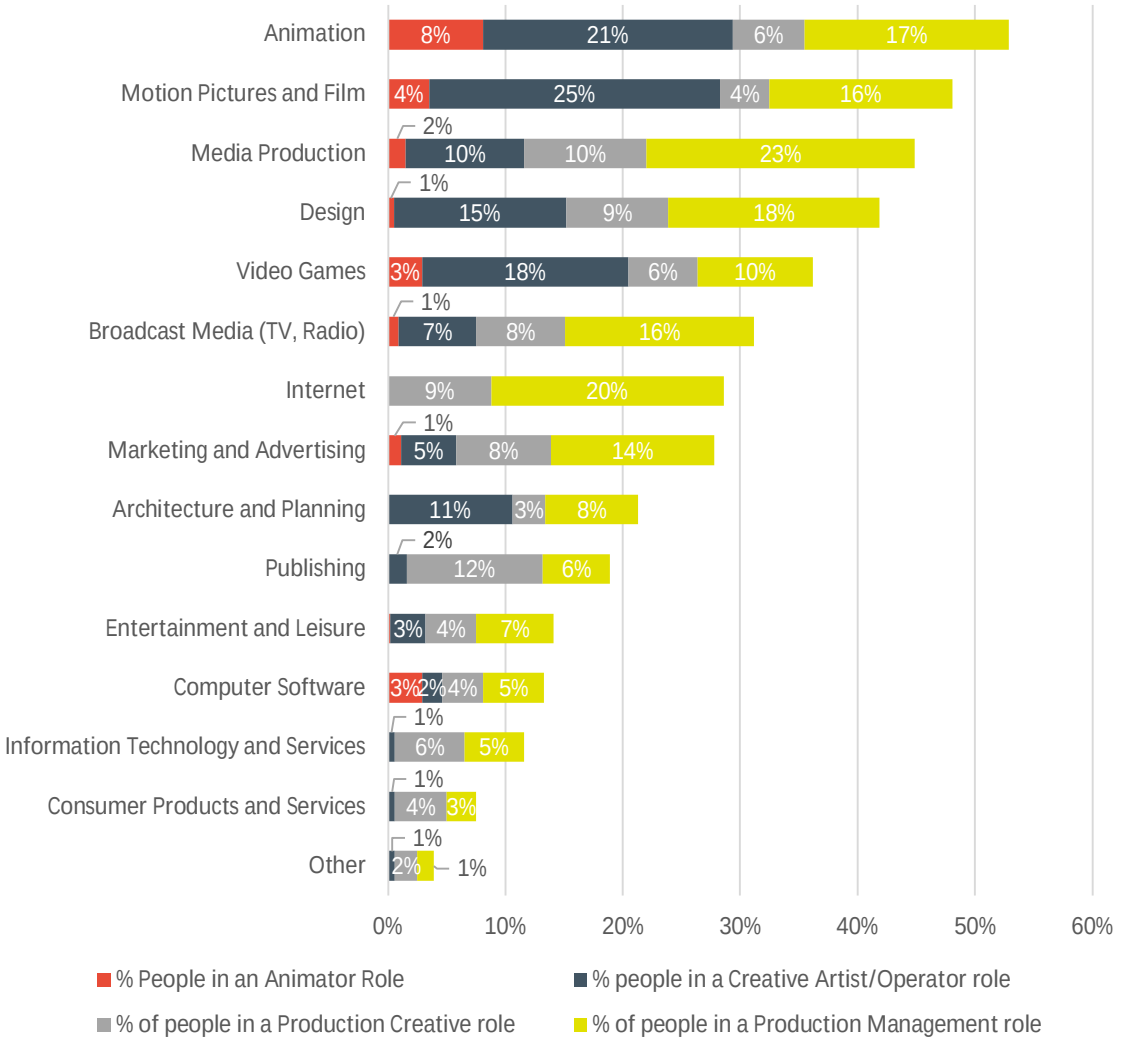
4.7 Note that this is an under-estimate of the total animation workforce as people who may be working in sectors excluded from this study's LinkedIn analysis have not been identified and so are excluded.

4.8 Many companies that are reliant on animation skills will be too small to support a full-time animator role, so the tasks are likely to be shared by people in other roles or outsourced to freelancers or other companies.

[38] Use of 'Key animation roles' – a tighter definition that only encompassed people working in 'Animator' and 'Creative artist/operator' roles – was considered. However, to avoid introducing an additional source of potential underestimation, a decision was made to proceed with the broader definition of employees in animation roles.

4.9 Figure 4.1 demonstrates the permeation of animation skills across the economy by highlighting the dispersion of the animation workforce across different sectors. It shows that more than two-fifths of people working in high animation intensity sectors, which includes motion pictures and film, media production and design, held animation roles. It also shows that animation skills play an important role in a number of low animation intensity sectors, such as broadcast media, internet and marketing and advertising.

Figure 4.1 Job roles by sub sector[1][2]



Source: LinkedIn & glass.ai (2021). Note: [1] Based on glass.ai sector taxonomy [2] Proportion of people with each of these roles as a proportion of all people listed in companies in this industry on LinkedIn.

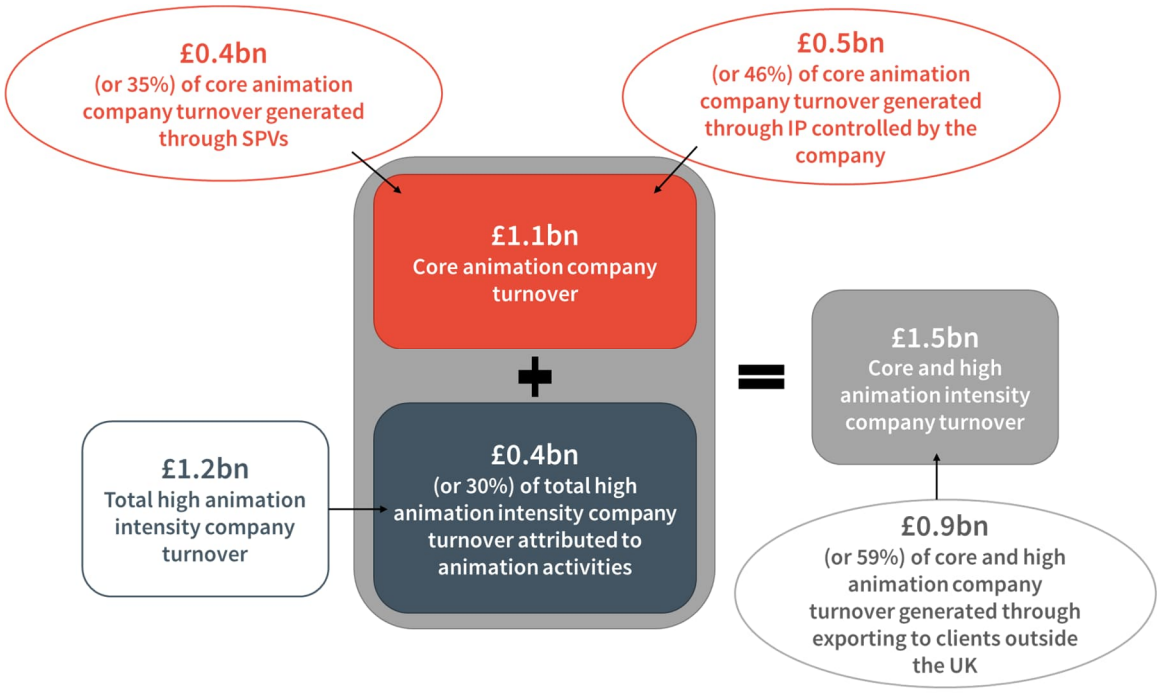
5. Economic impact findings

5.1 This section considers the economic contribution of the core animation sector and the high animation intensity part of its wider value chain to the UK economy. The primary research enabled a more nuanced bottom-up methodology for estimating the value of the UK core and high animation intensity activities.

Direct impacts

5.2 It is estimated that core animation companies generated £1.1bn in turnover[39]. High animation intensity companies attributed 30% (£0.4bn) of their overall turnover (£1.2bn) to animation related activities[40]. As such, it is estimated that the animation activities of core and high animation intensity companies together generated £1.5bn in turnover in 2019.

Figure 5.1 Sources of 'core' and 'wider value chain – high animation intensity' direct turnover, 2019


£0.4bn
(or 35%) of core animation company turnover generated through SPVs
£0.5bn
(or 46%) of core animation company turnover generated through IP controlled by the company
£1.1bn
Core animation company turnover
£1.2bn
Total high animation intensity company turnover
£0.4bn
(or 30%) of total high animation intensity company turnover attributed to animation activities
£1.5bn
Core and high animation intensity company turnover
£0.9bn
(or 59%) of core and high animation company turnover generated through exporting to clients outside the UK

Source: Hatch analysis of Winning Moves and BFI-commissioned *Screen Business* data. Note: The sample size for turnover earned through SPVs (n=14), IP controlled by the company (n=13) and exporting to clients outside the UK (n=17) suggests a +/-25% margin of error. Note: Turnover figures were rounded to the nearest £100m. Any discrepancies in the percentage calculations are due to rounding.

5.3 The primary research attempted to understand the role of Special Purpose Vehicles (SPVs), spin-off licensing based on intellectual property and the international nature of the sector and its wider value chain. Given the small samples achieved for these questions, the estimates obtained should be treated as broad indications:

[39] Based on a sample size of 68 core animation companies

[40] Based on a sample size of 64 high animation intensity companies

- **turnover from Special Purpose Vehicles (SPVs) accounted for 35% of direct core animation company turnover**. SPVs are companies established for a specific production and/or involve a joint relationship with another company. They are jointly or wholly owned by a company and can be registered in the UK or overseas.
- **46% of core animation company turnover was earned from Intellectual Property (IP) controlled by the company**. Spin-off licensing based on intellectual property relates to the downstream value generated through the exploitation of intellectual property generated by the animation sector (which includes characters, stories and content). This intellectual property can be used for a variety of purposes, including merchandising, theme parks, entertainment, publishing, tourism, video games and advertising.
- **59% of animation turnover generated from core and high animation intensity companies earned from exports to clients outside the UK.** This includes payments from broadcasters, distributors, merchandise licensees, content aggregators, subscription and non-subscription video on demand platforms, governments, etc. based outside the UK.

5.4 The core and high animation intensity company turnover generated in 2019 translates to a direct GVA contribution of c. £1bn. The animation activities of companies across the core and high animation intensity parts of the value chain directly supported 8,200 full time equivalent (FTE) workers in animation companies and 11,600 FTE freelance staff. Table 5.1 below summarises the direct economic impact findings of the Stage Two research.

Table 5.1 Direct economic impact, 2019

		Impact
Core	Turnover (£m)	£1,145
	GVA (£m)	£730
	Employment – Staff (FTE)	4,900
	Employment – Freelance (FTE)*	8,200
Wider value chain – high animation intensity	Turnover (£m)	£350
	GVA (£m)	£270
	Employment – Staff (FTE)	3,300
	Employment – Freelance (FTE)*	3,400
Total	Turnover (£m)	£1,495
	GVA (£m)	£995
	Employment – Staff (FTE)	8,200
	Employment – Freelance (FTE)	11,600

Source: Hatch, 2022. Note: Turnover figures are rounded to the nearest five million. Employment figures are rounded to the nearest hundred. Figures may not add up due to rounding. *This should be considered an upper bound, as FTE figures were not available in a small number of cases.

Indirect impacts

5.5 The primary research provided evidence on the share of turnover spend on purchasing goods and services, excluding expenditure with other animation companies[41], and the share which occurs domestically.

5.6 Table 5.2 shows that the core animation companies and high animation intensity companies indirectly supported £530m in turnover through supply chain expenditure in 2019, which translates to an indirect GVA contribution of £285m. The indirect employment supported amounted to 3,300.

Table 5.2 Indirect economic impact, 2019

		Impact
Core	Turnover (£m)	£420
	GVA (£m)	£225
	Employment – Staff (FTE)	2,600
Wider value chain – high animation intensity	Turnover (£m)	£110
	GVA (£m)	£60
	Employment – Staff (FTE)	700
Total	Turnover (£m)	£530
	GVA (£m)	£285
	Employment – Staff (FTE)	3,300

Source: Hatch, 2022. Note: Turnover figures are rounded to the nearest five million. Employment figures are rounded to the nearest hundred. Figures may not add up due to rounding.

Induced impacts

5.7 The supply chain expenditure evidence also meant that the impacts generated through the spending of employees supported along the supply chain could be estimated. Moreover, the primary research provided evidence on the share of turnover spend on the employment costs of staff and freelancers directly employed by animation companies.

5.8 Table 5.3 shows that the expenditure of employees and freelance staff employed in the core and high animation intensity sectors and the expenditure of employees supported along the supply chain generated £765m in turnover or £405m in GVA and supported 5,200 FTE workers.

[41] To avoid double counting with direct impact

Table 5.3 Induced economic impacts, 2019		
		Impact
Core	Turnover (£m)	£580
	GVA (£m)	£310
	Employment – Staff (FTE)	3,900
Wider value chain – high animation intensity	Turnover (£m)	£180
	GVA (£m)	£95
	Employment – Staff (FTE)	1,200
Total	Turnover (£m)	£765
	GVA (£m)	£405
	Employment – Staff (FTE)	5,200

Source: Hatch, 2022. Note: Turnover figures are rounded to the nearest five million. Employment figures are rounded to the nearest hundred. Figures may not add up due to rounding.

Total impact

5.9 Table 5.4 summarises the economic value supported by the 2,173[42] core animation companies and high animation intensity companies identified in the value chain. **In 2019, the total GVA contribution of these companies to the UK economy amounted to £1.7bn and they supported 16,600 FTE jobs, along with 11,600 directly employed FTE freelance staff.**

Table 5.4 Summary of the economic impact of the animation sector, 2019					
		Direct	**Indirect**	**Induced**	**Total**
Core	Turnover (£m)	£1,145	£420	£580	£2,145
	GVA (£m)	£730	£225	£310	£1,265
	Employment – Staff (FTE)	4,900	2,600	3,900	11,400
	Employment – Freelance (FTE)*	8,200	-	-	8,200
Wider value chain – high animation intensity	Turnover (£m)	£350	£110	£180	£640
	GVA (£m)	£270	£60	£95	£425
	Employment – Staff (FTE)	3,300	700	1,200	5,200
	Employment – Freelance (FTE)*	3,400	-	-	3,400
Total	Turnover (£m)	£1,495	£530	£765	£2,790
	GVA (£m)	£995	£285	£405	£1,690
	Employment – Staff (FTE)	8,200	3,300	5,200	16,600
	Employment – Freelance (FTE)*	11,600	-	-	11,600

Source: Hatch, 2022. Note: Turnover figures are rounded to the nearest five million. Employment figures are rounded to the nearest hundred. Figures may not add up due to rounding. *This should be considered an upper bound, as FTE figures were not available in a small number of cases.

[42] That is, 827 core animation companies and 1,346 high animation intensity companies.

6. Conclusions and recommendations

6.1 The Stage Two study provided a better understanding of the animation sector and its value chain by building on earlier research including the Stage One report and the BFI-commissioned *Screen Business* study.

The study's contribution

6.2 The Stage Two study employed a combination of research tools, including intelligent web-reading of company websites, searching employee data on LinkedIn and primary research. As such, it:

- **uncovered more companies undertaking animation related activities** by re-deploying the web-reading process developed during the Stage One study, but also validating and augmenting its findings by searching employee data on LinkedIn to find companies employing people performing animation related roles.
- **collected a richer set of information on company characteristics** as a result of glass.ai's improved matching capabilities to Companies House records.
- **provided a better understanding of the animation skills and workforce** by analysing the information the LinkedIn search collected on the type of roles encountered across the animation sector and its value chain.
- **developed a refined definition of the animation value chain** using an employee-based estimate of the animation intensity of different sub-sectors.
- **obtained more accurate economic impact estimates** through a refined methodology that uses primary research data to capture the value generated by the animation-related activities of non-core animation companies and to deploy an input-output technique for estimating the value generated through spending with suppliers and by employees. The BFI-commissioned *Screen Business* additionality survey questionnaire was consulted to facilitate alignment between the studies where possible.

The size of the animation sector and its wider value chain

6.3 The Stage Two study documented the wide reach of animation activities across the economy. It has identified **3,135 companies undertaking animation related activities** that have been categorised as:

- **Core animation:** companies whose core outputs are animation products and services based on how they describe themselves online. **827 core animation companies** were identified.
- **Wider animation value chain:** companies whose core output is not animation based on how they describe themselves online, but for whom animation is an important tool or market area for which they provide service. The study further distinguished between:
  - **High animation intensity:** companies along the wider animation value chain that support a relatively high proportion of animation roles. **1,346 companies in the high animation intensity** aspect of the value chain were identified.

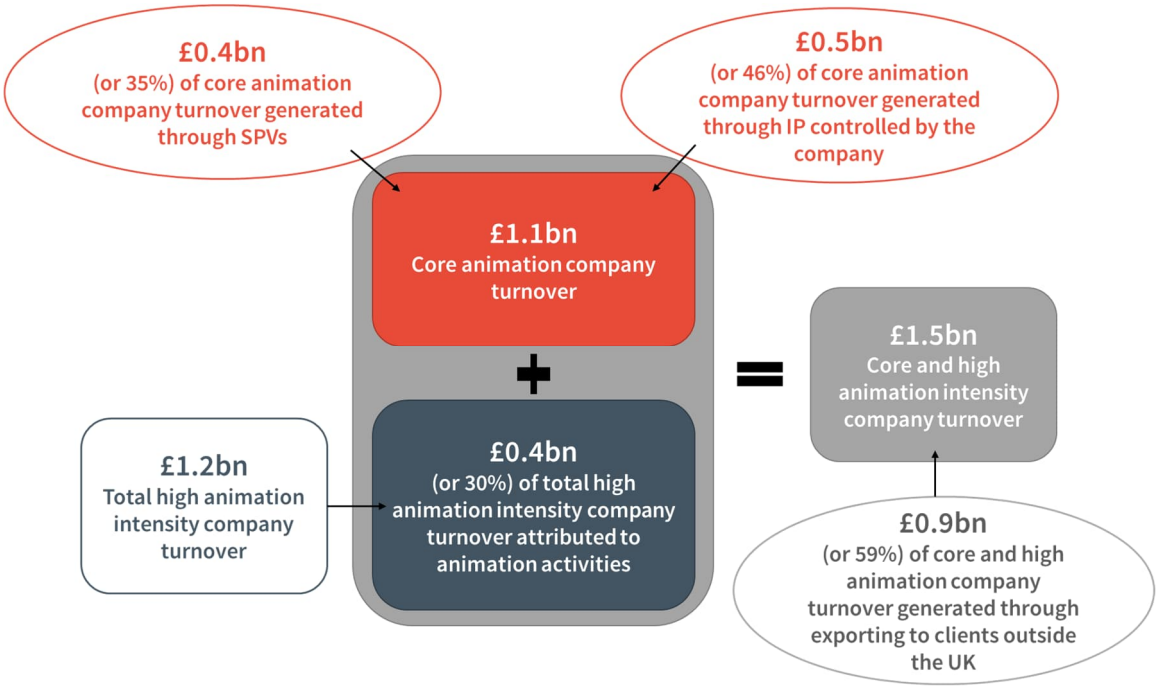
- **Low animation intensity:** companies along the wider animation value chain that support a relatively low proportion of animation roles. **962 companies in the low animation intensity** aspect of the value chain were identified.

6.4 The glass.ai LinkedIn analysis also identified **1,299 people who freelance** as animators (not already attached to one of the companies identified).

The economic value of animation activity

6.5 The Stage Two study estimated that the 2,173 core and high animation intensity companies identified generated £1.5bn of direct turnover from animation activities in 2019. The primary research has attempted to understand the share of turnover generated through of Special Purpose Vehicles, spin-off licensing based on intellectual property and the international nature of the sector and its wider value chain[43].

Figure 6.1 Sources of 'core' and 'wider value chain – high animation intensity' direct turnover, 2019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Source: Hatch analysis of Winning Moves and BFI-commissioned *Screen Business* data. Note: The sample size for turnover earned through SPVs (n=14), IP controlled by the company (n=13) and exporting to clients outside the UK (n=17) suggests a +/-25% margin of error. Note: Turnover figures were rounded to the nearest £100m. Any discrepancies in the percentage calculations are due to rounding.

[43] These estimates were based on small sample bases. As such, they should be treated as broad indicators.

6.6 The turnover generated by core and high animation intensity companies in 2019 translated to **a direct GVA contribution of £995m**. These companies directly employed around **8,200 full-time equivalent (FTE) workers** and **11,600 FTE freelancers**[44,45].

6.7 The total economic contribution (including direct, indirect and induced effects) is **£1.7 bn GVA and 16,600 FTE jobs**, along with the 11,600 directly employed FTE freelance staff. This is significantly larger than the estimates from the BFI-commissioned *Screen Business* study[46], which only captures the employment and GVA supported through the animation value chain by the elements of the sector in receipt of Animation Tax Relief (ATR).

6.8 The challenges encountered during the primary research phase suggest that these estimates may underestimate the contribution of animation activity to the UK economy to a limited extent:

- The value created by the animation activities of low animation intensity companies has not been considered. These were excluded from the scope of the survey to maximise coverage of the core and high animation intensity parts of the value chain, believed to reflect most of the contribution of the animation sector and its wider value chain.
- The survey response rate achieved for large high animation intensity companies was not optimal, despite the various mitigation strategies pursued at the primary research phase.

6.9 Moreover, in narrowing the scope of the survey questionnaire to minimise survey fatigue and encourage participation, the study was not able to obtain as detailed information as originally envisioned on the extent to which specific activities (e.g. merchandising) contribute to the turnover companies generate through animation. Overall, the challenges experienced during the primary research stage have highlighted how the core animation sector and its wider value chain has become over-surveyed.

6.10 Considering strategies to overcome this could be helpful in systematically collecting information that document the contribution of the sector and its wider value chain to the economy. Such strategies may include joining forces with other creative industries that are not served well by the current Standard Industrial Code (SIC) classification to:

- create a database of agreed and aligned financial and staff information to include the key information points required for economic impact evaluation.
- reach an agreement for annual database updates at financial year end.
- cross-sector trade body co-ordination of any required sector industry survey to supplement the available financial data, including on securing contact details for the most appropriate point of contact.
- further exploration of the role for artificial intelligence applied to unstructured data and reduce the need for survey data.

[44] Freelancers on long-term contracts (12-24 months) as well as other freelancers. This should be considered an upper bound, as FTE figures were not available for a small number of cases.

[45] The glass.ai LinkedIn analysis also identified 1,299 people who freelance as animators (not already attached to one of the companies identified). To limit scope for double counting, the freelance animators identified through the LinkedIn analysis were not included in the 11,600 FTE freelancers estimate.

[46] Estimated total GVA contribution of £255m and 3,730 FTE jobs supported

Acknowledgements

The BFI would like to thank the individuals and organisations who contributed to the delivery of this report. We would particularly like to thank Animation UK for supporting the research and Sue Gray as the project manager acting for the BFI.

Appendix A - Technical appendix

A.1 The Technical Appendix provides additional detail on the web-reading methodology, primary research framework and economic impact methodology.

Web-reading

A.2 glass.ai has an ongoing discovery process that reads websites and classifies the site as a company website if it detects certain criteria around content (e.g., active, in English, company content) and if possible, will predict the sector and geography of the company if enough content is available on the site (e.g., a UK address). Currently glass.ai reads over 2m UK based company websites. This represents a significant proportion of UK companies with a web presence[47]. Where possible the websites of UK companies are also matched to Companies House records. As well as discovering new content, this ongoing process keeps the existing view of the companies that it knows about up-to-date.

A.3 To make this possible, glass.ai has invented AI technology that applies techniques at the frontiers of machine language understanding to create an automatic semantic layer for the web. It combines language understanding through semantic analysis with resource crawling at scale and the maintenance of a deep topic ontology.

- **Semantic Analysis**: in a first step, the crawler classifies the content of text on web sources (e.g. company descriptions, topics, news, etc.) with state-of-the art precision. So, when the crawler goes to a website, it makes its own decisions and it can understand what the description for the company is, the news, products mentioned, people, jobs advertised, and extracts linked entity models from the unstructured web content. The current entity-detection accuracy is 95%. To achieve this semantic entity recognition, glass.ai train models offline using machine learning techniques against small volumes of data that can be efficiently applied against web-scale volumes of data. These models can be thought of as language templates to execute a multi-layered approach to text analysis that is able to focus online (at crawl time) onto the text that matters. This process encompasses a continuous test harness to improve models for accuracy, and a semi-automated build-test-learn pipeline was developed to enhance complex entity detection. Using this infrastructure, new language models can be built to detect new types of content.
- Company descriptions, for example, are identified with language models that consider multiple features such as location on the web page, use of specific keywords and phrases, sentence structure etc. Also, based on descriptions and other attributes, each company is classified into one or more sectors and assigned a weight showing its proximity to the sector. Specialised companies tend to have a single sector with high weight, while those with a diversified activity have multiple sector predictions with lower weight values. The automatic sector classification has been trained using a sample of company classifications based on an industrial taxonomy created by LinkedIn. Current accuracy of the descriptions and sector predictions is 95%.

[47] It is estimated that there are circa 2.5m UK organisations with an active website. At the moment of writing, the web-crawler is reading 85%+ of them.

- **Resource Crawling:** in a second step, glass.ai has industrialised the extraction process by developing an intelligent crawling service that targets the crawl to read content and follow links that are most likely to find the entities that it has been created to detect. By directing the crawl to find known entities and concepts within the crawl instead of retrospectively filtering data returned, it is possible to get large scale information-extraction efficiently running on very modest hardware, and the system as designed scales linearly. This means glass.ai can read millions of sources without the need of massive computation resources.
- **Topic Ontology:** in a third step, glass.ai has derived a 'topic map' for the data. This taxonomy includes company activities, products and services, and is key to understanding what a company does and the activities it is involved in. This allows to interrogate the data by subject classification. For example, the 'animation' search suggested semantically related topics such as 'motion graphics', 'visual effects', '3D' and others. The system currently contains around 300,000 topics. Glass.ai continue to improve this topics map to drive simple and complex entity detection and add other entity types to the ontology. The topic ontology has been built and continues to evolve from reading the web content that is crawled and consuming crowd sourced content, such as Wikipedia. It was augmented with specific words and animation-based terms in cases where they are not sufficiently covered by the current core topic ontology.

Limitations

A.4 The public web provides a rich context around the activities of companies. However, not all UK companies have a website, so the approach is limited to those that have an independent web presence. This may impact the representation of smaller organisations (including freelancers) as they are less likely to have a website than larger organisations. Further, the absence of web presence can be sector dependent. That is, companies in certain sectors may be more likely to have a web presence than others.

A.5 It is estimated there are circa 2.5m UK organisations with an active website. At present the crawler has not discovered all the websites of these organisations and is currently reading 85%+ of them. To mitigate this risk for specific research, the core glass.ai dataset was augmented with external lists of known companies and their websites, and core online resources.

A.6 As the web is constantly changing and new sites are appearing and disappearing, sites may be missing because they have not yet been discovered by the onboarding schedule or may have been in a format or structure that glass.ai's processes were not able to read or do not match the models that are being detected. In particular, because the approach is language based (relying on reading static text content) it may struggle to read image, flash or Javascript heavy sites, where content is displayed dynamically or embedded in other objects.

A.7 When performing targeted research, a challenge with using specific keywords to identify activities is that if a relevant company does not list those words on their website or is on a page that has not been read by the directed crawl then the company may not be included in the results. This was mitigated by supplying a broad range of topics associated with the types of companies that need to be discovered and using the topic ontology to discover topics related to the supplied list.

LinkedIn analysis

A.8 It was recognised during Stage One of the animation mapping project that certain sectors were heavily reliant on animation in the delivery of their services, but companies were unlikely to mention it in their website company description. To overcome this limitation, glass.ai additionally crawled and used employee data collected from LinkedIn to identify companies that employed people performing animation related roles. Therefore, the methodology in Stage Two was extended to include the following steps:

- Discover the LinkedIn accounts of the companies identified by the glass.ai crawler.
- For each profile, glass.ai's web-reader read the people listed on LinkedIn as currently working in the UK at each company, together with their role and skills. To identify animation related roles, the LinkedIn roles were matched and categorised according to the UK Screen Association's workforce survey. This analysis informed the employee-based approach to identifying the degree on animation dependence across the wider value chain. The results for the video games sub-sector were then used as a threshold for classifying companies into high and low animation intensity.
- As an additional step to improve coverage, glass.ai searched LinkedIn for people in 'Animation', 'Creative Artist/Operator', 'Production Creative' and 'Production Management' roles. This in turned helped identify additional companies engaging in animation activities across the main sectors[48], which were used to supplement the results of the web-reading. The LinkedIn analysis also enabled searching for freelancers in animation roles that were not attached to one of the identified companies, so not related to any other listed companies.

A.9 It is worth noting that within the hands-on 'Creative artist/operator' category specific 'Animator' roles exist, but the broader UKSA defined roles have proved more useful because most smaller companies have people performing more general tasks which will include animation, and the 'Creative artist/operator' provides a good proxy to this.

A.10 Following the additional steps using the data available from LinkedIn enabled a broader set of animation companies to be identified than from the web-reading alone and provided a bigger pool for further investigation.

A.11 Even so, these additional companies will not capture the full set of companies that are reliant on animation. This is because the LinkedIn analysis covered the sub-sectors that the first web-reading exercise identified as relevant and did not search for animation roles outside these sectors. Moreover, many of the companies are too small to require a full-time animator so the tasks are likely to be shared by people in other roles. But, the overall animation dependency ratio still provides an indication of the level of animation activities taking place across each sector.

Primary research

A.12 Winning Moves, a company specialising in designing and delivering research to inform policies, programmes and strategies, was subcontracted to undertake the primary research. The primary

[48] A combination of high number of companies and a high reliance on animation roles.

research design was tested through a short pilot undertaken in November 2021 and refined before the main stage survey was deployed in field in February and March 2022.

The pilot

A.13 Getting companies to provide all the relevant information (to the extent covered by the BFI-commissioned *Screen Business* additionality survey to animation companies) was expected to be challenging. To address this, two options for data collection were to be used flexibly, but slightly differently, according to the sample group:

- **A five-minute conversation** covering the key data points required to complete the economic impact assessment, designed so that it could be completed by gatekeepers (e.g. a receptionist) at any moment in time.
- **The full questionnaire** using some of the questions from the BFI-commissioned *Screen Business* additionality survey to ensure consistency across financial and employment information. Some wider more qualitative questions were also used to gather richer insights about the nature of the company's animation activities and business models. This questionnaire would require arranging an appointment with someone with insight into financial operations.

A.14 Information was requested for 2019 to align with the BFI-commissioned *Screen Business* data and avoid the potential complications associated with information for 2020, which was affected by the Covid-19 pandemic. The questionnaires were tailored so that companies not in the core value chain were asked to confirm their sector and the proportion of animation activity within their company.

A.15 The database compiled by glass.ai was used as the sample frame for the primary research. The target population was split into groups based on:

- **size –** companies with up to 50 employees were considered 'small' and those with more than 50 employees were considered 'large'.
- **the place of the company in the value chain –** core and high animation intensity companies were approached. The high animation intensity sample consisted of companies in the design, media production and motion pictures and film sectors.

A.16 Approaching companies in the wider value chain with low animation intensity was initially proposed. However, considering the resource available, core animation and high animation intensity companies were prioritised, as these were expected to account for most of the economic value of the sector and its wider value chain. To avoid survey fatigue, companies that participated in the BFI-commissioned *Screen Business* additionality survey were approached to request their permission to use the data they had given to the BFI-commissioned *Screen Business*. Twelve companies gave their permission.

A.17 The glass.ai database included telephone numbers for 47% of the core and high animation intensity companies identified. Companies without a phone number were removed from the database and survey participants were randomly selected from the remaining records.

A.18 Large companies were approached via telephone to complete the longer 20-minute full questionnaire. Small companies were also approached via telephone, but asked to complete the shorter 5-minute survey instead.

A.19 Where an appropriate person was not available by phone, and an email address was provided by the gatekeeper, subsequent initial contact was made by email, and then followed up via telephone and email.

A.20 The pilot phase committed to approaching 65 companies calling each of them by telephone up to seven times in total, attempting to secure a response. Fewer contacts would be made in the event of completion of an interview, refusal to participate or other dead end to contact. This approach allowed Winning Moves to contact companies in the same way it would during the main stage. Therefore, it gave an indication of willingness to participate (given sufficient opportunity).

A.21 The pilot population and rate of response achieved are summarised in Table A.1. The response rate for small companies across both core animation and high animation intensity groups suggested it was possible to secure sufficient participation from them during the main stage. Securing a response form large companies was more challenging, the greatest barrier being establishing contact with the desired respondent.

A.22 Note that the pilot responses were added to the main stage survey results.

Table A.1 Pilot survey – responses

	Small		Large	
	Core	**High intensity**	**Core**	**High intensity**
Pilot population (sample drawn from records with a phone number in the Glass.ai database)	25	25	8	7
Completed interviews	13	8	1	1**
Reported that they are not undertaking any animation activity	0	0	0	2
No longer in business	1	0	0	0
Refusals	1	2	1	0
Unobtainable number/unable to access phone number	2	1	1	0
Email contact only possible	1	3	5	2
Other unable to secure response e.g. repeated no answer	7	9	0	2
Deemed out of scope*	0	2	0	0

Source: Winning Moves, 2021.

*Note: On reflection, these companies were deemed to be out of the scope of the survey and any survey responses they provided were not included.

**Note: Due to rescheduling, the interview had to take place after the official completion of the pilot phase.

The main stage survey

A.23 Several steps were taken to address the issues encountered during the pilot. Researcher resource was allocated to some additional manual searching for the large companies to address telephone number gaps in the glass.ai database. However, for small companies, only the database records with telephone numbers already attached were used.

A.24 To address challenges around getting past the gatekeeper for large companies, Animation UK contacted large animation companies to request contact details for an appropriate person and passed these onto Winning Moves, who requested a full interview. Moreover, a more focused full questionnaire was developed by excluding some questions to avoid discouraging large company participation (refer to Appendix C for the full questionnaire).

A.25 Although BFI-commissioned *Screen Business* additionality survey participants had been excluded from the sampling frame, some of the contacts passed on by Animation UK had in fact

participated in the BFI-commissioned *Screen Business* survey, in which case they were partially interviewed. Specifically, these companies were only asked questions unique to the new survey.

A.26 The process of arranging full interviews was expected to be lengthy based on experience from the pilot phase, so a main stage fieldwork period of five weeks following the initial approach by Animation UK was recommended.

A.27 Despite best efforts, a practical way of getting past the gatekeeper of large high animation intensity companies was not found. As such, a short five minute interview was arranged with these companies instead (refer to Appendix C for the short questionnaire).

A.28 Table A.2 summarises the main stage sampling approach and targets across the four sub-groups that were approached.

Table A.2 Main stage sample approach and targets

Sub-group	Approach	Target
Large core animation	Senior level, dedicated interviewer with a primary focus of achieving an appointment to complete a full questionnaire. Where it is not possible to achieve this, companies will be asked instead to have the 5 minute conversation covering key data points.	7-10 full interviews plus as many 5-minute conversations (where full interview not possible)
Large high animation intensity	Telephone researcher primarily focused upon having the 5 minute conversation covering key data points with as many companies as possible. Respondents to be asked if we can come back to a relevant person for the full questionnaire (where resource allows for this).	30 x 5 minute interviews (10 per sector)
Small core animation	Telephone researcher primarily focused upon having the 5 minute conversation covering key data points with as many companies as possible.	30 x 5 minute interviews
Small high animation intensity	Telephone researcher primarily focused upon having the 5 minute conversation covering key data points with as many companies as possible.	40 x 5 minute interviews (min. 10 per sector)

Source: Winning Moves

A.29 Monitoring of progress indicated a persistent challenge in securing a response among the high animation intensity subgroup. The following steps were taken to address this:

- An online version of the short questionnaire was set up. The online survey was launched in March 2022 and was circulated to all companies in the glass.ai database[49].

[49] This yielded 33 responses overall.

- A manual web-review of large high animation intensity companies that did not otherwise participate in the primary research was undertaken. Where the review suggested that animation is a main focus of the company, a Companies House search was done to check if the company address matched our glass.ai record. Then, the 2019 accounts of the company were examined to extract turnover information, if it was not already recorded in the glass.ai database. Where an exact figure was not available, Winning Moves recorded whether the company is classed as a micro-entity or small company according to Companies House, which provided an indication of the range of their turnover[50].

A.30 Table A.3 provide a breakdown of the responses achieved for small and large core and high animation intensity companies through the primary research.

Table A.3 Main survey – breakdown of responses by company size (response rate relative to company population with phone numbers/entire company population)

Sub-group	Core animation	High animation intensity	Total
Small (<50 employees)	71 (28%/13%)	72 (13%/7%)	143 (18%/9%)
Large (>50 employees)	4 (24%/14%)	2 (3%/2%)	6 (7%/4%)
Total	75 (22%/9%)	74 (11%/5%)	149 (15%/7%)

Soure: Hatch analysis of Winning Moves and BFI-commissioned *Screen Business* data

Economic impact methodology

Direct impacts

A.31 To estimate the total turnover contribution of the animation sector and the high animation intensity part of its wider value chain, the primary research asked respondents to provide turnover information for 2019. High animation intensity companies were asked about the share of their turnover attributed to animation activities. The turnover generated from animation activities per respondent was calculated for the following sub-groups:

- Small core animation companies
- Large core animation companies
- High animation intensity companies[51].

A.32 The database compiled by glass.ai through the web-reading and LinkedIn analysis identified the population of active companies for each sub-group. The turnover per respondent estimates for

[50] Companies with turnover of less than £632,000 are classed as micro-entities. Companies with turnover of less than £10.2m are classed as small companies.

[51] Given the low response rate among large high animation intensity companies, economic impact estimates would not be robust for this sub-group. Hence, it was considered more prudent to consider small and large high animation intensity companies jointly.

each subgroup were scaled to their respective population[52] and aggregated to obtain the total turnover directly supported by core and high animation intensity companies.

A.33 The average share of turnover used to buy goods and services was estimated for each subgroup using survey data. This was subtracted from turnover estimates to obtain Gross Value Added (GVA) for each subgroup, which were aggregate to produce the total GVA directly supported by core and high animation intensity companies.

A.34 The primary research also collected employee information for 2019. The share of LinkedIn employees in any animation roles from the LinkedIn analysis was applied to the survey data[53]. The average number of employees in animation roles per company respondent was estimated for each subgroup and scaled to their respective population[54]. These were aggregated to estimate the total number of company staff directly supported by core and high animation intensity companies. A similar approach was followed to obtain the number of total freelance staff directly supported by core and high animation intensity companies.

A.35 Note that although the 1,299 freelance animators identified through the LinkedIn analysis were not linked to a company in the glass.ai database, they were not included in the number of total freelance staff directly supported by the core and high animation intensity companies to limit scope for double counting. As the survey sought to capture the number of long-term and other freelance staff companies employed over the year, the estimate derived based on the survey data should reflect all freelance employment creation over the year.

Indirect impacts

A.36 For each subgroup, survey data was used to estimate:

- the average share of animation turnover spend on purchasing goods and services, excluding expenditure with other animation companies (to avoid double counting with direct impact).
- the average share of those expenditure incurring domestically using survey data for each sub-group.

A.37 This information was used in conjunction with the direct turnover estimates above (see 'Direct Impacts' section) to obtain domestic supplier expenditure. The sectoral distribution of supplier expenditure was estimated using survey data, allowing us to use ONS Input-Output tables to estimate indirect GVA and employment impacts.

Induced impacts

A.38 The GVA and employment generated by the expenditure of staff employed along the supply chain were following the approach described in the 'Indirect Impacts' section.

[52] The size of 242 core animation companies could not be determined. These have been allocated by assuming that the data available on the distribution of small and large core animation companies is reflective of the wider population.

[53] The assessment was repeated using the share of LinkedIn employees in 'key animation' roles. However, to avoid introducing an additional source of potential underestimation, a decision was made to proceed with the broader definition of employees in animation roles.

[54] Ibid

A.39 To estimate the GVA and employment generated by the expenditure of company and freelance staff directly supported by core and high animation intensity companies, the average share of animation turnover spend on their employment costs was estimated using survey data for each sub-group. This was applied to the direct turnover estimates (see 'Direct Impacts' section) to obtain total employment costs. Standard assumptions on income tax, employer/employee NI and pension contributions and savings were applied to obtain disposable income.

A.40 ONS Input-Output tables were used to estimate the sectoral distribution of household expenditure and the induced GVA and employment impacts.

A.41 Table A.4 maps the data used in the economic impact methodology to their source.

Table A.4 Data used in the economic impact methodology

Data source	Data input
Winning Moves & the BFI-commissioned *Screen Business* additionality survey	• Primary research evidence was used to determine: + the total turnover of the company + the share of a company's turnover that can be attributed to animation activities + the share of turnover used to buy goods and services (including and excluding expenditure with other animation companies) + the average share on supplier expenditure incurred domestically + the number of staff and freelancer employed by the company + the average share of turnover spent on employment costs.
ONS Input-Output tables	• Input-Output tables provided Gross Value Added (GVA) and employment coefficients, Type I and Type II effected for the calculation of indirect and induced impacts.
Glass.ai	• The population of active companies was determined using the database compiled through the web-reading and LinkedIn analysis. • The share of staff employed in any animation roles was determined from the workforce analysis carried out with the data collected through the LinkedIn analysis.

A note on the BFI-commissioned *Screen Business* study

Through the primary research design process, the Stage Two study has sought to maximise the degree of alignment with the economic impact approach of the BFI-commissioned *Screen Business* study. The key difference between the two reports is their scope. The BFI-commissioned *Screen Business* study captured the employment and GVA supported through the animation value chain by the elements of the sector in receipt of Animation Tax Relief. Its definition of the animation industry focused on cultural products to be engaged with for their own entertainment/artistic value. The Stage Two report considered the animation activity undertaken by companies across the UK economy. Its economic impact estimates reflected the contribution by core and high animation intensity companies. The Stage Two study also attempted to capture the freelance employment supported by core and high animation companies. Both studies considered the total (direct, indirect and induced) impacts generated through a bottom-up approach that relied on input-output modelling of the indirect and induced impacts. Finally, the BFI-commissioned *Screen Business* study considered the spill-over impacts of animation in the retail sector (through merchandising) and the tourism sector. The Stage Two economic impact methodology captured the impact supported by the merchandising revenue earned by companies undertaking animation, but it does not consider forward linkages[55].

Assessment of the economic impact methodology

A.42 **The refinements to the economic impact methodology enabled the estimation of the contribution of the animation sector more accurately compared to the Stage One report.** Complementing secondary data collection with primary research has enabled the development of a more precise bottom-up[56] approach to economic impact modelling, which is better aligned with the approach of the BFI-commissioned *Screen Business* study.

A.43 Importantly, the primary research collected data on the share of activity that can be attributed to animation in non-core animation companies. The LinkedIn analysis was crucial in developing a primary research framework to inform that. Namely, the workforce analysis provided a better understanding of the animation intensity of different sub-sectors. A more tailored definition of the animation value chain was developed as a result.

A.44 **However, the challenges encountered during the primary research stage mean that the economic impact estimates of the Stage Two report are subject to limitations and should be seen as conservative estimates.** In light of resource constraints, low animation intensity companies were excluded from the scope of the primary research, and in turn the economic impact estimations. This approach has meant that the available resources were directed towards securing better quality data for core animation and high animation intensity companies, which account for the majority of the sector's activity. Moreover, despite the various mitigation strategies described above, large high animation intensity companies are under-represented in the sample of companies interviewed. Hence, economic impact estimates for the high animation sector could be skewed towards the value created by smaller sized companies.

[55] Forward linkage effects arise from the consumption of animation activity outputs by other sectors, such as retail and tourism.

[56] A bottom-up approach uses low-level information on the drivers of economic impact to work-up the total economic contribution of the sector.

A.45 **Given the primary research evidence available, it is not possible to isolate accurately the contribution of Special Purpose Vehicles, spin-off licensing and merchandising to the economic value created by the animation sector.** As the approach relies on turnover to infer GVA impact, it will capture the economic value created through all income streams of a company. However, the challenges experienced during the primary research limited the study's ability to comment on the extent of the contribution of specific activities to animation turnover. Specifically, the primary research collected evidence on the share of turnover that core animation intensity companies earn through Special Purpose Vehicles (SPVs) and spin-off licensing. However, given the response rate achieved, these can be only considered broad indications. Moreover, in an effort to minimise survey fatigue, the survey did not collect specific evidence on the extent to which activities such as merchandising contribute to turnover.

Appendix B - Role category definitions

B.1 The animation related roles classification below draws on the UK Screen Alliance's workforce survey. In addition to the broad definition covering all four role categories, a stricter definition focusing on key animation roles was also developed. This stricter definition only covers roles in the 'Animator' and 'Creative artist/operator' categories.

Table B.1 Role categories

Role	Category	Role	Category
2D Animator	Animator	2D Artist	Creative Artist/Operator
Cutscene Animator	Animator	Technical Artist	Creative Artist/Operator
Motion Capture Animator	Animator	3D Artist	Creative Artist/Operator
3D Animator	Animator	Vehicle Artist	Creative Artist/Operator
CG Animator	Animator	Artist /Other Artist	Creative Artist/Operator
Facial Animator	Animator	Colourist	Creative Artist/Operator
Stop Motion Animator	Animator	Compositor	Creative Artist/Operator
Crowd Animator	Animator	Flame Operator	Creative Artist/Operator
Technical Animator	Animator	Illustrator	Creative Artist/Operator
Character Animator	Animator	Inbetweener	Creative Artist/Operator
Animator / Other Animator	Animator	Prop Maker	Creative Artist/Operator
Head of Animation	Animator	Model Maker	Creative Artist/Operator
Animation Lead	Animator	Maker / Other Maker	Creative Artist/Operator
Animation Director	Animator	Revit Modeller	Creative Artist/Operator
Studio Assistant	Creative Artist/Operator	Facial Modeller	Creative Artist/Operator
ATD	Creative Artist/Operator	Character Modeller	Creative Artist/Operator
Storyboard Artist	Creative Artist/Operator	3d Modeller	Creative Artist/Operator
CFX Artist	Creative Artist/Operator	Modeller /Other Modeller	Creative Artist/Operator
Character Artist	Creative Artist/Operator	Motion Tracker	Creative Artist/Operator
Digital Artist	Creative Artist/Operator	Matte Painter	Creative Artist/Operator
Environment Artist	Creative Artist/Operator	Background Painter	Creative Artist/Operator
Lighting Artist	Creative Artist/Operator	Painter /Other Painter	Creative Artist/Operator
Visual Artist	Creative Artist/Operator	Generalist TD	Creative Artist/Operator
VFX Artist	Creative Artist/Operator	Houdini FX TD	Creative Artist/Operator
Concept Artist	Creative Artist/Operator	Rigging TD	Creative Artist/Operator
UI Artist	Creative Artist/Operator	Lighting TD	Creative Artist/Operator
Flame Artist	Creative Artist/Operator	FX TD	Creative Artist/Operator
Cinematic Artist	Creative Artist/Operator	Lead FX TD	Creative Artist/Operator
Game Artist	Creative Artist/Operator	Environment TD	Creative Artist/Operator
Layout TD	Creative Artist/Operator	Model TD	Creative Artist/Operator
Lighting Lead TD	Creative Artist/Operator	Lead Lighting TD	Creative Artist/Operator
VFX TD	Creative Artist/Operator	Senior Lighting TD	Creative Artist/Operator

Role	Category
TD / Other TD	Creative Artist/Operator
Lead Lighter	Creative Artist/Operator
Compositing Lead	Creative Artist/Operator
Creative Lead	Creative Artist/Operator
CG Asset Lead	Creative Artist/Operator
Art Lead	Creative Artist/Operator
VFX Lead	Creative Artist/Operator
Pipeline TD	Creative Artist/Operator
Rigger / Other Rigger	Creative Artist/Operator
Production Assistant	Production Creative
Motion Designer	Production Creative
UX/UI Designer	Production Creative
Graphic Designer	Production Creative
Sound Designer	Production Creative
Audio Designer	Production Creative
Technical Designer	Production Creative
Designer / Other Designer	Production Creative
Dubbing / Sound Mixer	Production Creative
VFX Editor	Production Creative
Video Editor	Production Creative
Editor / Other Editor	Production Creative
Writer	Production Creative
Game Producer	Production Creative
Head of Design	Production Creative
Graphics Programmer	Production Creative
Audio Programmer	Production Creative
Creative Producer	Production Management
VFX Producer	Production Management

Role	Category
VFX Engineer	Creative Artist/Operator
Motion Capture Engineer	Creative Artist/Operator
Post Production Tech Op	Creative Artist/Operator
Puppet Maker	Creative Artist/Operator
Character Rigger	Creative Artist/Operator
Design Director	Production Management
Operations Director	Production Management
Account Director	Production Management
Studio Director	Production Management
Audio Director	Production Management
Managing Director	Production Management
Technical Director	Production Management
Art Director	Production Management
Design Manager	Production Management
Production Manager	Production Management
Art Manager	Production Management
Assistant Producer	Production Management
Video Producer	Production Management
Visual Effects Producer	Production Management
Line Producer	Production Management
Associate Producer	Production Management
Assistant Producer	Production Management
Executive Producer	Production Management

Role	Category
Producer /Other Producer	Production Management
Production Coordinator	Production Management
Studio Coordinator	Production Management
Project Coordinator	Production Management
Post Production Coordinator	Production Management
Operations Coordinator	Production Management
Creative Director	Production Management
Production Director	Production Management

Role	Category

Note: 'Animator' roles = pink; 'Creative artist/operator' roles = grey; 'Production creative' roles = yellow; 'Production management' roles = blue.

Appendix C - Primary research main stage survey questions

Full survey

1. i. Please can I confirm that your company's primary line of business is in the <Sector> sector?

   Yes. *Continue to q2 if animation or to q1iii. if Motion pictures and film, media production and design.*

   No. ii. Please can you explain what sector your company does primarily operate in?

   a. Motion pictures and film *Continue to q1iii.*

   b. Media production *Continue to q1iii.*

   c. Design *Continue to q1iii.*

   d. Animation *Continue to q2.*

   e. Other – please specify *Open end. Interviewer to ask respondent for more detail to check if this is a sub-sector of any of the sectors we are interested in. For example, if they focus on one aspect of film production eg visual effects, they can still be classified within the sector 'motion pictures and film'. Only end the call, if the respondent is definite that their business is not related to these sectors. Thank and end call.*

   iii. And that your company undertakes some animation activity?

   Yes *Continue to q2.*

   No *If no, thank and end call.*

2. How many paid workers did you employ in your business in 2019?

   Please include employees who work for the UK company but are based overseas.

   For each, enter exact figure where known, or a range, or unknown.

a. Full-time employees

b. Part-time employees

c. Freelancers on long-term contracts (e.g. 12-24 months)

d. Other freelancers (report the number of full-time equivalents, if possible)

e. Apprenticeships/interns

   If unknown stated. Open end box for interviewer to add any explanation of why respondent has found this difficult to answer.

3. In which UK devolved nation or English region is your company's primary UK office based (i.e. the office with the majority of your UK-based employees)? *Interviewer to select one.*

a. London
b. South East
c. South West
d. East of England
e. West Midlands
f. East Midlands
g. Yorkshire and Humber
h. North East
i. North West
j. Scotland
k. Wales
l. Northern Ireland

4. Do you operate from more than one location?

   If yes, please can you tell me which of the UK nations (England, Scotland, Wales, Northern Ireland), you have offices in?

   If they have other offices in England, in which English regions are your offices?

   Please can you tell me what % of your workforce as of 31st December 2019 worked out of (or were assigned to) your different offices?

   For each, enter exact % figure where known, an estimate, or a range, or unknown. If respondent can only give numbers rather than %, please take these down and then convert to % on completion of interview.

   a. London
   b. South East
   c. South West
   d. East of England
   e. West Midlands
   f. East Midlands
   g. Yorkshire and the Humber
   h. North East
   i. North West
   j. Scotland
   k. Wales
   l. Northern Ireland

m. Overseas

n. Total:

5. Please can you tell me which income bracket best represents your company's total turnover in 2019 (or financial year ending in 2019), for example, £5 million to £7.49 million, £7.5 million to £9.99 million? I can read through the list of options if you prefer?

   We are looking for the turnover of the UK-based company but this should include any income that the UK company receives from overseas. If your company also uses special purpose vehicles (SPVs) for its projects, please also include your company's share of those SPV production financing and/ or revenue.

a. £0 - £249,999
b. £250,000 - £499,999
c. £500,000 - £999,999
d. £1,000,000 - £1,999,999
e. £2,000,000 - £2,999,999
f. £3,000,000 - £4,999,999
g. £5,000,000 - £7,499,999
h. £7,500,000 - £9,999,999
i. £10,000,000 - £12,499,999
j. £12,500,000 - £14,999,999
k. £15,000,000 - £19,999,999
l. £20,000,000 - £24,999,999
m. £25,000,000 - £29,999,999
n. £30,000,000 - £39,999,999
o. £40,000,000 - £49,999,999
p. £50,000,000 or greater – (For this income bracket only) Please can you give me an exact figure?

6. *Asked only to high animation intensity (but not core animation) businesses.* I'd like to understand what percentage of your turnover relates to animation. If animation did not exist and your business had not undertaken any animation related activities in 2019 (from producing animation to any related activities, for example, merchandise income or character licensing royalties), what % of your 2019 turnover do you think would have been lost?

   Please think about all income that relates to or is dependent on animation activity even if it is not producing animation itself.

Note to interviewer: If the respondent says that they would have substituted animation with another activity, they should still be asked to report the value that animation was providing at the time.

Enter exact % figure if known:

If you don't know the exact figure, please can you tell me which of the following % brackets you think this would fall into:

a. None.
b. 1-5%
c. 6-9%
d. 10-19%
e. 20-29%
f. 30-39%
g. 40-49%
h. 50-59%
i. 60-69%
j. 70-79%
k. 80-89%
l. 90% or more
m. Unknown. *Open end box for interviewer to add any explanation of why respondent has found this difficult to answer.*

I'm now going to ask some questions to understand a bit more about some of the different sources of your turnover in 2019.

7. *Only asked to core animation companies, not high animation intensity.* What proportion of your total turnover reported previously, if any, was earned from Special Purpose Vehicles (SPVs)?

SPVs are companies established for a specific production and/or involve a joint relationship with another company. They are jointly or wholly owned by your company. They may be registered in the UK or overseas.

Enter exact % figure if known:

If you don't know the exact figure, please can you tell me which of the following % brackets you think this would fall into:

a. None.
b. 1-5%
c. 6-9%
d. 10-19%
e. 20-29%

f. 30-39%
g. 40-49%
h. 50-59%
i. 60-69%
j. 70-79%
k. 80-89%
l. 90% or more
m. Unknown *Open end box for interviewer to add any explanation of why respondent has found this difficult to answer.*

8. *Only asked to core animation companies, not high animation intensity.* What percentage approximately of your total turnover in 2019 was earned from intellectual property (IP) controlled by your company ("owned IP") vs. service work?

   Note to interviewer: Service work would be work for other companies who own the intellectual property. Intellectual property would relate to the character/story of animation activity e.g. Peppa Pig.

   Enter % share of turnover from animation activity earned from IP controlled by their company.

   If you don't know the exact figure, please can you tell me which of the following % brackets you think this would fall into:

   a. None.
   b. 1-5%
   c. 6-9%
   d. 10-19%
   e. 20-29%
   f. 30-39%
   g. 40-49%
   h. 50-59%
   i. 60-69%
   j. 70-79%
   k. 80-89%
   l. 90% or more
   m. Unknown *Open end box for interviewer to add any explanation of why respondent has found this difficult to answer.*

9. *Phrasing for core animation businesses:* What percentage of your total annual turnover was ultimately earned from clients outside the UK in 2019?

Phrasing for high animation intensity businesses: What percentage of the total annual turnover you earned from your animation activity was ultimately earned from clients outside the UK in 2019?

Please include the value of payments or financing from foreign broadcasters, distributors, merchandise licensees, content aggregators, subscription and non-subscription video on demand platforms, governments, etc. ultimately based outside the UK. For example, although Netflix has a UK subsidiary, they are ultimately an American company and so would be counted here as a client outside the UK.

Enter % share of turnover earned from clients outside the UK.

If you don't know the exact figure, please can you tell me which of the following % brackets you think this would fall into:

a. None.
b. 1-5%
c. 6-9%
d. 10-19%
e. 20-29%
f. 30-39%
g. 40-49%
h. 50-59%
i. 60-69%
j. 70-79%
k. 80-89%
l. 90% or more
m. Unknown *Open end box for interviewer to add any explanation of why respondent has found this difficult to answer.*

10. What percentage of your total turnover in 2019 was used to pay your employment costs for directly employed staff including those on temporary contracts but excluding all freelancers?

Please include the value of salaries, pensions and employee benefits.

Enter % share of turnover used for personnel costs.

If you don't know the exact figure, please can you tell me which of the following % brackets you think this would fall into:

a. None.
b. 1-5%
c. 6-9%
d. 10-19%

e. 20-29%
f. 30-39%
g. 40-49%
h. 50-59%
i. 60-69%
j. 70-79%
k. 80-89%
l. 90% or more
m. Unknown *Open end box for interviewer to add any explanation of why respondent has found this difficult to answer.*

11. *Only asked if a value greater than 0 is given for 10 c or 10d.* What percentage of your total turnover in 2019 was used to pay your employment costs for freelance staff?

Please include the value of salaries, pensions and employee benefits.

Enter % share of turnover used for personnel costs.

If you don't know the exact figure, please can you tell me which of the following % brackets you think this would fall into:

a. None.
b. 1-5%
c. 6-9%
d. 10-19%
e. 20-29%
f. 30-39%
g. 40-49%
h. 50-59%
i. 60-69%
j. 70-79%
k. 80-89%
l. 90% or more
m. Unknown *Open end box for interviewer to add any explanation of why respondent has found this difficult to answer.*

12. What proportion of your total 2019 turnover was used to buy in goods and services?

Enter % share of turnover used to buy:

i. Goods and services from other animation companies (excluding freelancers)

ii. Rent and premises costs (excluding business rates)

iii. Administrative expenses including telecoms and data communications, IT, software, business services, insurance, legal/accounting services, travel, marketing and business development

iv. Any other goods and services from companies not principally engaged in animation activities

If you don't know the exact figure, please can you tell me which of the following % brackets you think this would fall into:

a. None.

b. 1-5%

c. 6-9%

d. 10-19%

e. 20-29%

f. 30-39%

g. 40-49%

h. 50-59%

i. 60-69%

j. 70-79%

k. 80-89%

l. 90% or more

m. Unknown *Open end box for interviewer to add any explanation of why respondent has found this difficult to answer.*

13. What proportion of these bought in goods and services were bought from outside the UK in 2019?

Enter % share of bought in goods and services bought outside the UK.

If you don't know the exact figure, please can you tell me which of the following % brackets you think this would fall into:

a. None.

b. 1-5%

c. 6-9%

d. 10-19%

e. 20-29%

f. 30-39%

g. 40-49%

h. 50-59%

i. 60-69%

j. 70-79%

k. 80-89%

l. 90% or more

m. Unknown *Open end box for interviewer to add any explanation of why respondent has found this difficult to answer.*

14. Thinking about your company in the three years prior to the Covid pandemic, (2017-2019) was the value of your animation related activity in the UK increasing, decreasing or stable?

    a. Increasing – What do you think was driving this increase?

    b. Decreasing - What do you think was driving this decrease?

    c. Stable

    d. Don't know

15. Over the next five years, do you expect your business' income from animation related activity to:

    a. Grow

    b. Stay at a similar level

    c. Decline

    d. Don't know

    What is the reason for this? *Open-end, capture verbatim.*

16. Over the next five years, do you expect your business to have any particular support needs to help you maintain or grow your animation related activity from government, representative organisations such as the BFI, Animation UK or others?

    a. Yes – please specify. *Open-end, capture verbatim.*

    b. No

    c. Don't know

Focused survey

1. a. How many paid workers did you employ in your business in 2019? Please include full-time and part-time employees and employees who work for the UK company but are based overseas, giving your best estimate at total full-time equivalent employees.

Enter exact figure where known, otherwise an estimate or range.

b. How many freelancers did you employ in your business in 2019? Please give your best estimate at total full-time equivalent employees?

Enter exact figure where known, otherwise an estimate or range.

a. *If the respondent states that they are the only person working in this business i.e. it is a one person band, they will be asked:* Do you work primarily on a freelance basis producing animation for other businesses? Yes/No

If yes, interview to close and outcome to be classified as 'freelancer only'. This will count as an interview but the further questions will not be asked.

2. In which UK devolved nation or English region is your company's primary UK office based (i.e. the office with the majority of your UK-based employees)? *Interviewer to select one.*
    a. London
    b. South East
    c. South West
    d. East of England
    e. West Midlands
    f. East Midlands
    g. Yorkshire and Humber
    h. North East
    i. North West
    j. Scotland
    k. Wales
    l. Northern Ireland

3. Please can you tell me which income bracket best represents your company's total turnover in 2019 (or financial year ending in 2019), for example, £5 million to £7.49 million, £7.5 million to £9.99 million? I can read through the list of options if you prefer?

    We are looking for the turnover of the UK-based company but this should include any income that the UK company receives from overseas. If your company also uses special purpose vehicles (SPVs) for its projects, please also include your company's share of those SPV production financing and/ or revenue.

    a. £0 - £249,999
    b. £250,000 - £499,999
    c. £500,000 - £999,999
    d. £1,000,000 - £1,999,999

e. £2,000,000 - £2,999,999
f. £3,000,000 - £4,999,999
g. £5,000,000 - £7,499,999
h. £7,500,000 - £9,999,999
i. £10,000,000 - £12,499,999
j. £12,500,000 - £14,999,999
k. £15,000,000 - £19,999,999
l. £20,000,000 - £24,999,999
m. £25,000,000 - £29,999,999
n. £30,000,000 - £39,999,999
o. £40,000,000 - £49,999,999
p. £50,000,000 or greater. (For this income bracket only) Please can you give me an exact figure?
q. Not willing to answer.

4. *Asked only to high animation (but not core animation) businesses.*

   I'd like to understand what percentage of your turnover relates to animation. If animation did not exist and your business had not undertaken any animation related activities in 2019 (from producing animation to any related activities, for example, merchandise income or character licensing royalties), what % of your 2019 turnover do you think would have been lost?

   Please think about all income that relates to or is dependent on animation activity even if it is not producing animation itself.

   Enter exact % figure if known:

   If you don't know the exact figure, please can you tell me which of the following % brackets you think this would fall into:

   a. None.
   b. 1-5%
   c. 6-9%
   d. 10-19%
   e. 20-29%
   f. 30-39%
   g. 40-49%
   h. 50-59%
   i. 60-69%
   j. 70-79%
   k. 80-89%

l. 90% or more

m. Unknown. *Open end box for interviewer to add any explanation of why respondent has found this difficult to answer.*

5. Over the next five years, do you expect your business' income from animation related activity to:

   a. Grow

   b. Stay at a similar level

   c. Decline

   What is the reason for this? *Open-end, capture verbatim.*

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